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SCE Training Curriculum for Integrated Automation Solutions Totally Integrated Automation (TIA)

Siemens Automation Cooperates with Education

PA Module P03-01

SIMATIC PCS 7 – Advanced Layout of UIs

Cooperates with Education

Automation

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ADVANCED LAYOUT OF UIS

TRAINING OBJECTIVE

After working through this module, the students have additional knowledge regarding the design of the user interface of an operator station. They are able to make additional information available on the detail level. To this end, they use adapted message lists and trend curves. The students are able to combine created composites into a user defined object and redesign existing objects as user defined objects. These objects can then be made available for reuse.

THEORY IN BRIEF

In this chapter, some aspects of OS engineering are considered in greater depth. While in chapter P02-01 automatic generation of process images was primarily discussed, now supplementary techniques for designing process control are described.

The flow diagrams (refer to P02-01) are usually arranged in the following hierarchical levels:

– Plant display
– Area display
– Plant section/group display
– Detail display

This classification can result from the plant hierarchy. While the upper levels aim for a good overview of the entire plant or corresponding areas, the plant section display and the detail display are to provide considerably more information about the area under consideration to make situation-conforming settings of parameters or fault diagnosis possible.

In addition to detailed information about the current state of the areas under consideration, the representation of process values in curves is particularly helpful to analyzing deviations. In curves, the time characteristics of a process value are represented. With one glance, the operator can immediately read off the following information:

– The time when striking changes occurred in the course
– Process values at the time mentioned above
– Gradients for certain points in time
– Dependencies between process values at simultaneous display
– Extreme values (when and how large)
– Fluctuation range
– Set point deviations
– Frequencies

Curve displays provide the operator with an expanded basis for decisions regarding control action. If a process value is outside the permissible range, based on the curve the user is informed of process value development in the most recent past and can detect whether the value continues to change for the worse or is improving.

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THEORY

HIERARCHY OF FLOW DIAGRAMS

In chapter P02-01 the objectives of process control as well as of basic design concepts and techniques for OCM interfaces (operator control and monitoring interfaces) were described.

Chapter P01-03 introduced the physical model of a system consisting of a plant, a plant section, equipment module and an individual control unit. Analogously, a hierarchy of flow diagrams exists in process visualization that is arranged as follows, according to [1]:

– Plant diagram
– Area diagram
– Plant section/group diagram
– Detail diagram

The hierarchy of the flow diagram facilitates orientation and specific display selection. The uppermost levels Plant display and Area display provide an overview and are usually represented schematically. In small plants, the plant display corresponds to the area display (refer to Figure 1). In the plant display, it has to be possible to select each area directly. In the area display, the plant sections are displayed in a manner that their state can be recognized and the plant section can be selected and operated. The plant section and group display reflect functional relationships; typical units, final control units and control systems can be operated. Detail displays are of great importance to parameter assignment, commissioning and error search if there are plant faults. In detail displays, individual devices and units are represented and by means of effective lines, the functional relationships can be visualized. For example, the signal flow of a control loop can be tracked. [1].

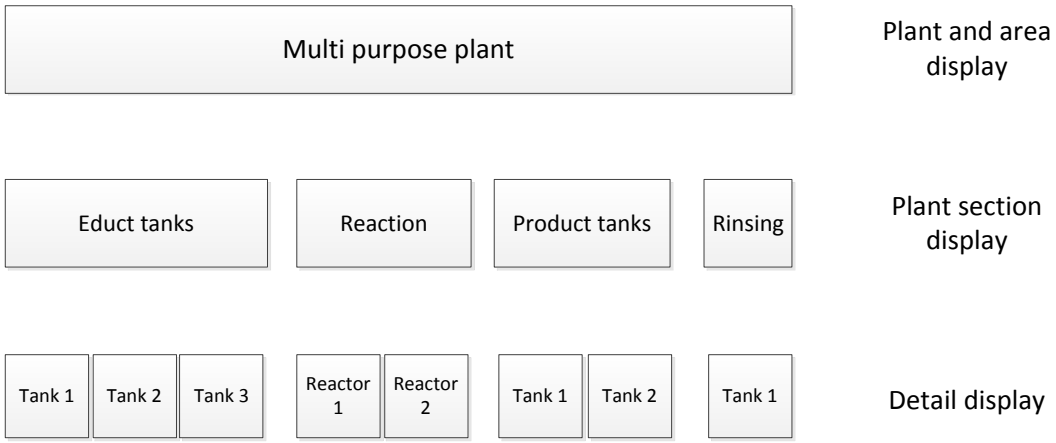

Figure 1: Hierarchy of mimics

CURVES

Curves are used for process control during intended operation, or for diagnosing faults [2]. They supplement the display with flow diagrams, particularly because they indicate the dependence of process values on time.

Related displays are: the display of a process value depending on the path, on other process variables, and even of several reference variables that are not described here, however.

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The Purpose of Curves

Curves are displayed to show courses. By selecting different time horizons, different tasks can be implemented. Three variants exist in reference to the time the operator has the curve displayed.

1. The curve shows the past without the present. Such a curve is called history and is used for analysis. This can refer to a fault analysis but also to an analysis to optimize process control.
2. The curve shows the present with the recent past. This type is called pre-history. It can be used to display a trend. It is the most frequently used type of display regarding process control. From the course, the operator is able to read off qualitative values such as rising, falling, or steady and quantitative values such as the process value at a certain time, or the difference regarding a setpoint.
3. The curve shows the most recent past, the present and the future, and is called prediction display (refer to Figure 2). It is used to predict a process value and allows the user to intervene before the event occurs. To represent the future, the possible value course has to be calculated in advance.

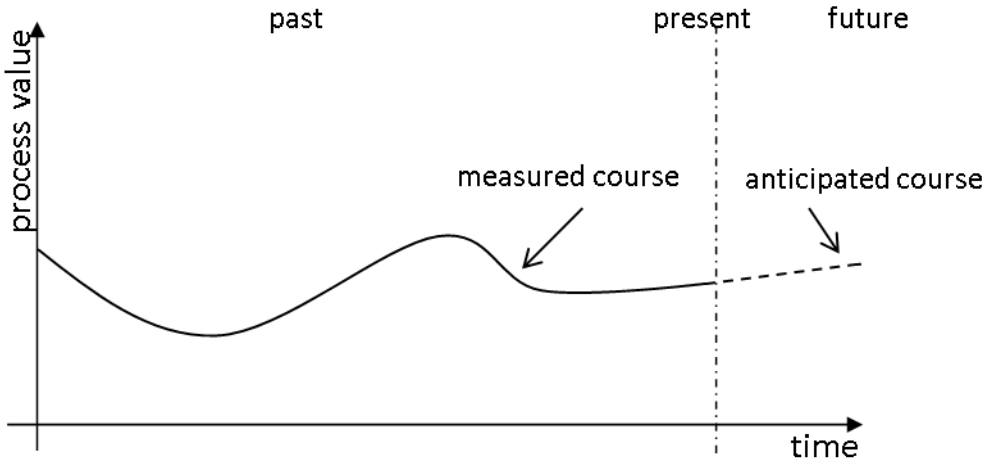

Figure 2: Prediction display according to [2]

In general, the following values can be determined quite well through curves:

– Points in time where striking changes occurred in the course
– Process values at the points in time indicated before
– Gradients at certain points in time
– Dependencies between process values at simultaneous displays
– Extreme values (when and how large)
– Fluctuation ranges
– Deviations from the setpoint
– Frequencies

This variety of characteristics that can be read off shows the importance of curve displays. While the current process values and extreme values that occurred can be represented otherwise -for example, with analog or digital displays- the display of the other characteristics in such a compressed and immediately understandable form is difficult to conceive [3].

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Acquisition and Storage of Curve Values

For the displayed course to reflect the actual course, the sampling rate of the process value has to correspond at least to twice the change frequency of the process value. In most cases, this requirement can be met with cyclical acquisition every 1s [2].

In PCS 7, the sampling rate corresponds to the acquisition cycle of a process value. As long as a process value is not archive, only the pre-history of the process value can be displayed. By archiving a process value (refer to chapter P02-03) the history can be displayed also, since archive variables are resorted to.

When curves are displayed, the pre-history differs from the history as shown in Table 1.

Table 1: Visible Differences between Prehistory and History [2]

	Prehistory	**History**
Position of the time span shown in the curve field	Always relative to the present	Through an absolute point in time and a selected time span or through two absolute points in time
Labeling of the time axis	Relative time indications; if needed, can be switched to absolute time indication	Absolute time indications can be switched to time indications relative to a defined point in time of an event
Updates	Curve is updated during the display whereby all curve points are shifted	Curve does not change
Value axis	The value axis is usually located at the point in time of the present (at the right margin of the display)	The value axis is located on the left margin of the display

Designing Curve Displays

In [2], guidelines for designing curve displays are provided. PCS 7 implements the basic design details by default; for that reason, they are described here only briefly. There are design rules, however, that you can implement yourself by means of the settings at OS engineering. To do this in a specific way, a few details are introduced here.

The curve display is displayed in the working area of the display area (refer to P02-01). It consists of the title field, the curve labeling field, and the curve field. The title field should contain the information for the unambiguous assignment to the process environment. In the curve labeling field, it should be possible to read off the relationship of displayed the curve and the process value. The curve display field is used to display the curve and should be as large as possible. To implement the curve display field, the following information is provided.

To facilitate reading off the values, grid lines have to be available. The value axis in this case should display several lines as an extension of the scale marks, and the time axis several lines according to the current time grid. The number of grid lines should be low and optically remain in the background. To this end, they should not be shown in color or blue. Reading rulers can provide additional support.

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The curves should be displayed colored as continuous lines or as a series of dots. Color coding can be selected as required. The number of curves for each curve display field should be limited to six. The colors of the curves should be easily distinguishable from each other.

To implement the curve course, the following directions are recommended:

– From right to left: more recent values to the right, older values to the left

– From top to bottom: more recent values on top, older values on the bottom

The deciding factor in this case is whether a display time span that is as large as possible (from left to right) or a value resolution that is as high as possible (from top to bottom) is needed.

When curves with a prehistory are displayed, the curve course is updated; the entire curve shifts in the direction of the past (refer to Figure 2). If there is a shift with each new entry, the entire curve display field can be used to display the prehistory, and the operator can follow the display well since the curve is shifted only a little. If needed, it should be possible to stop the update.

For labeling the value axis, 1, 2 and 5 should be used for scale marks as well as their decade multiple. The value axis can be scaled in units or in percent. Table 1 shows where the value axis should be located. Also, a display with two value axes can be useful; in this case, the percent axis for all curves is displayed to the left, and the display of the values of a curve in units to the right. The time axis should always be labeled as shown in Table 1.

To display time spans [2] offers the time spans and scale marks recommended in Table 2. It was taken into account here that if there is a change to another display time span, the same point in time can be located again.

Table 2: Recommended Display Time Spans [2]

Primary Task	Preassigned Display Time Spans	Updating Cycle (only for prehistory)	Scale Mark
Commissioning	5 min	1 s	1 min
Process Control or Analysis	15 min	1 s	5 min
	30 min	2 s	5 min
	2 h	8 s	30 min
	8 h	32 s	1 h
	24 h	96 s	4 h
	4 days	384 s	12 h
Analysis	7 days	-	1 day
	30 days	-	7 days
	90 days	-	15 days
	360 days	-	90 days

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ACTIVEX CONTROLS

Curves are configured in OS engineering of PCS 7 either by setting up curve groups (Chapter P02-03) or by using configurable ActiveX Controls. PCS 7 provides ActiveX Controls for alarms, curves, and tables. Curves can be used to display time characteristics (Online Trend Control) and also to display dependencies between process values (Function Trend Control).

In the Online Trend Control, two different sources exist for displaying a curve. The first source is the process value that is buffered while the ActiveX Control is active. With this source, the trend can be displayed during monitoring. Here it is important that when ActiveX Control is closed, the values can no longer be called. If the second source is used, the data is taken from the archive (refer to P02-03). The process values taken from there can be displayed again and again. Depending on the time span selected, past data (history) can be called as well as the most recent data (prehistory). These values can be called again as long as they are in the short term archive. The size of the short term archive depends on the configuration as described in chapter P02-03.

Additional ActiveX Controls are the display of process values in tables (Online Table Control) or of the alarms in alarm lists (Alarm Control). Alarm Control receives its data always from the archive while the table, analogous to the Online Trend Control, has different sources.

ActiveX Controls are quite suitable for designing detail displays, since they provide additional information specifically for a detail area. To this end, specific process values for the corresponding detail display or filters for alarm lists can be selected and preconfigured; for example, by means of the attribute Origin. Figure 3 sketches a possibility for designing the detail display.

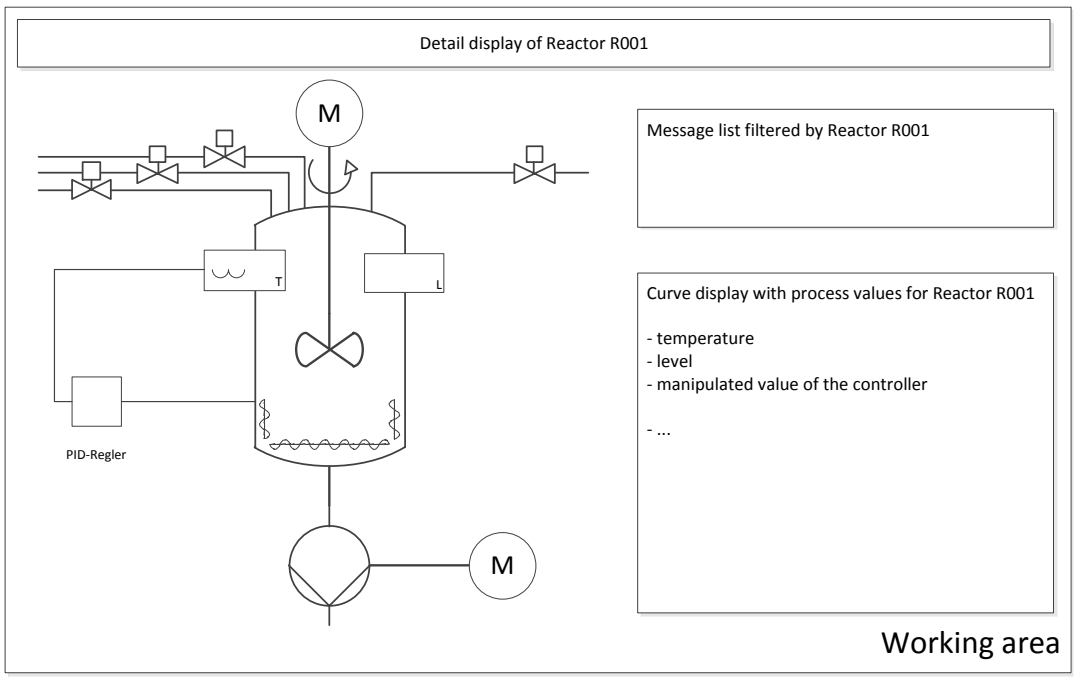

Figure 3: Layout for a detail display

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USER DEFINED OBJECTS

A user defined object (UDO for short) is an object that can be dynamical and consists of individual objects. At OS Engineering, we identify the properties that can be changed and select them for the user defined object. Thus, only the most important properties of all individual objects are visible and provide a good overview of the properties. In addition, it is possible to specify some properties as unalterable for all instances, and combining each individual object for each instance is dispensed with also.

On the other hand, there is the increased effort for the careful selection of the properties; however, it amortizes quickly through multiple use. User defined objects that are to be used multiple times are stored in the library.

Also, alterability is facilitated since, for example, a block name or a CFC name has to be changed only at the user defined object and not at all individual objects.

The individual instances can be changed or supplemented with additional objects any time. If C-Actions are used for dynamical actions, this is done in the case of user defined objects in a script, and not in many individual objects. This increases the performance of visualization.

LITERATURE

[1] VDI/VDE 3699 Blatt 3: Prozessführung mit Bildschirmen – Fließbilder, Nov 1999.
(Process Control with Screens – Flow Diagrams)

[2] VDI/VDE 3699 Blatt 4: Prozessführung mit Bildschirmen – Kurven, Aug 1997.

[3] Kindsmüller, M. C.: Trend-Literacy, Shaker Verlag 2006.

[4] Siemens AG: Projektierungshandbuch Operator Station (V7.1), März 2009.
(Configuration Manual Operator Station)

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STEP BY STEP INSTRUCTIONS

TASK

In this task, the display structure will be expanded by another level in order to show more detail for the individual tanks and reactors.

In the example, create in the display for reactor R001 a detail view with a bar display for the reactor level, an online trend display and a message window for displaying the alarms associated with Reactor R001.

Then, for better reusability (for example, for Reactor 002) change the bar display into a user defined object.

TRAINING OBJECTIVE

In this chapter, the student learns the following:

– To set up an ActiveX Control for displaying alarms

– To filter the display of alarms matching the hierarchy

– To insert and parameterize an ActiveX Control of the type ‘Online Trend’ to display archive variables

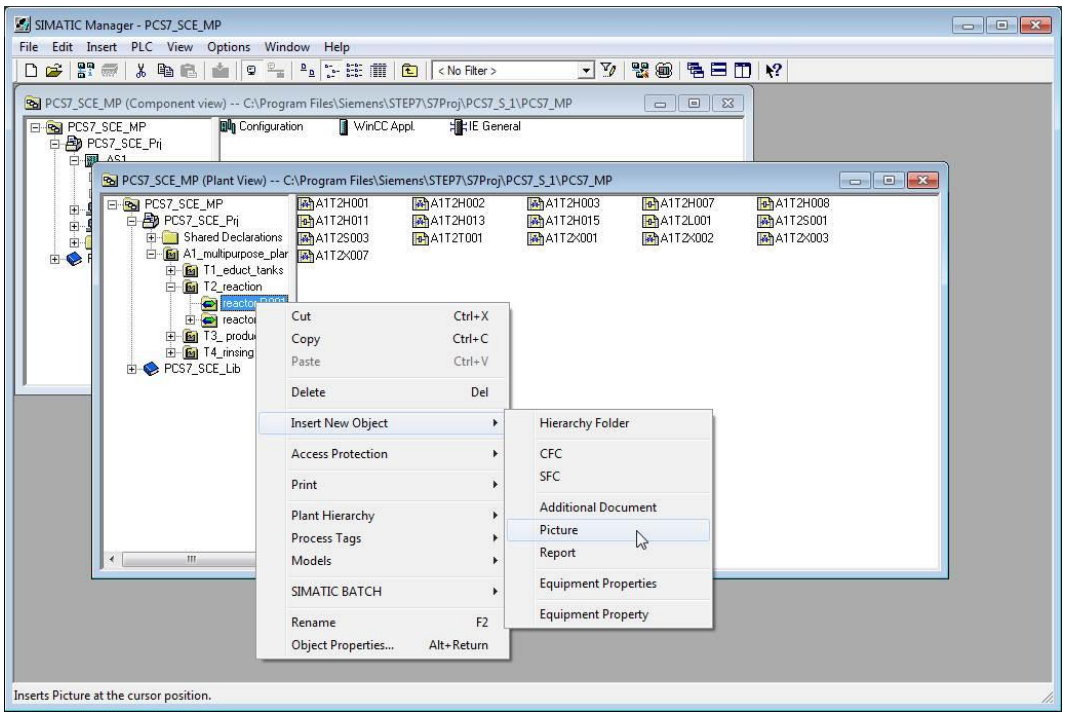
– To create from a group of objects a user defined object

– Parameterizing and using user defined objects

These instructions are based on the project ‘PCS7_SCE_0203_Ueb_R1305_en.zip‘.

PROGRAMMING

1. First, insert a picture in the folder ‘Reactor R001’ and name it ‘Reactor R001‘. (→ Reactor R001 → Insert New Object → Picture → Reactor_R001)



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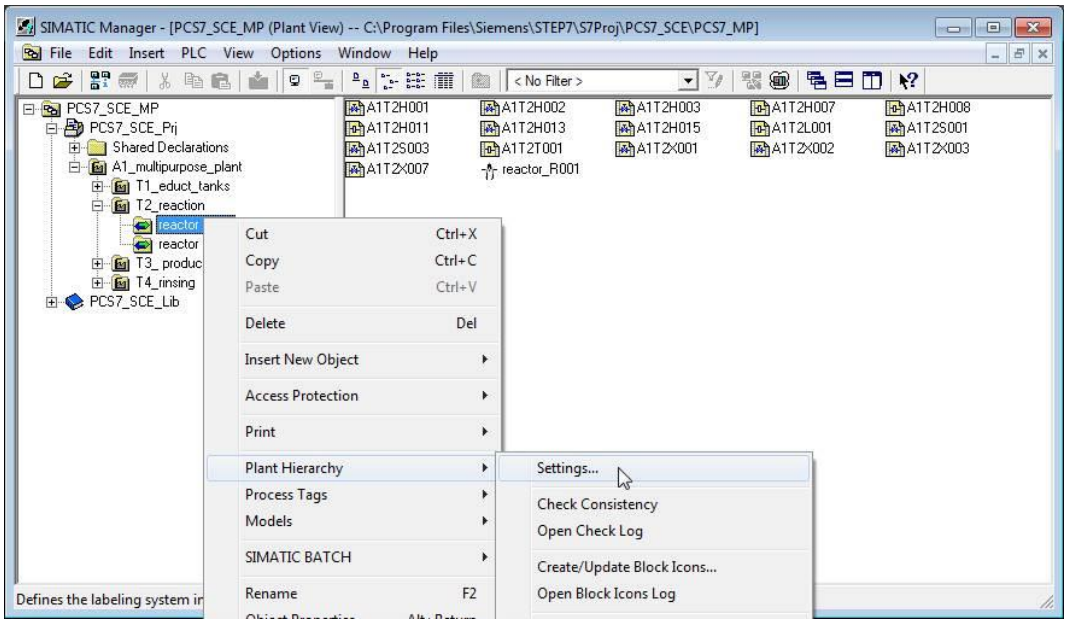
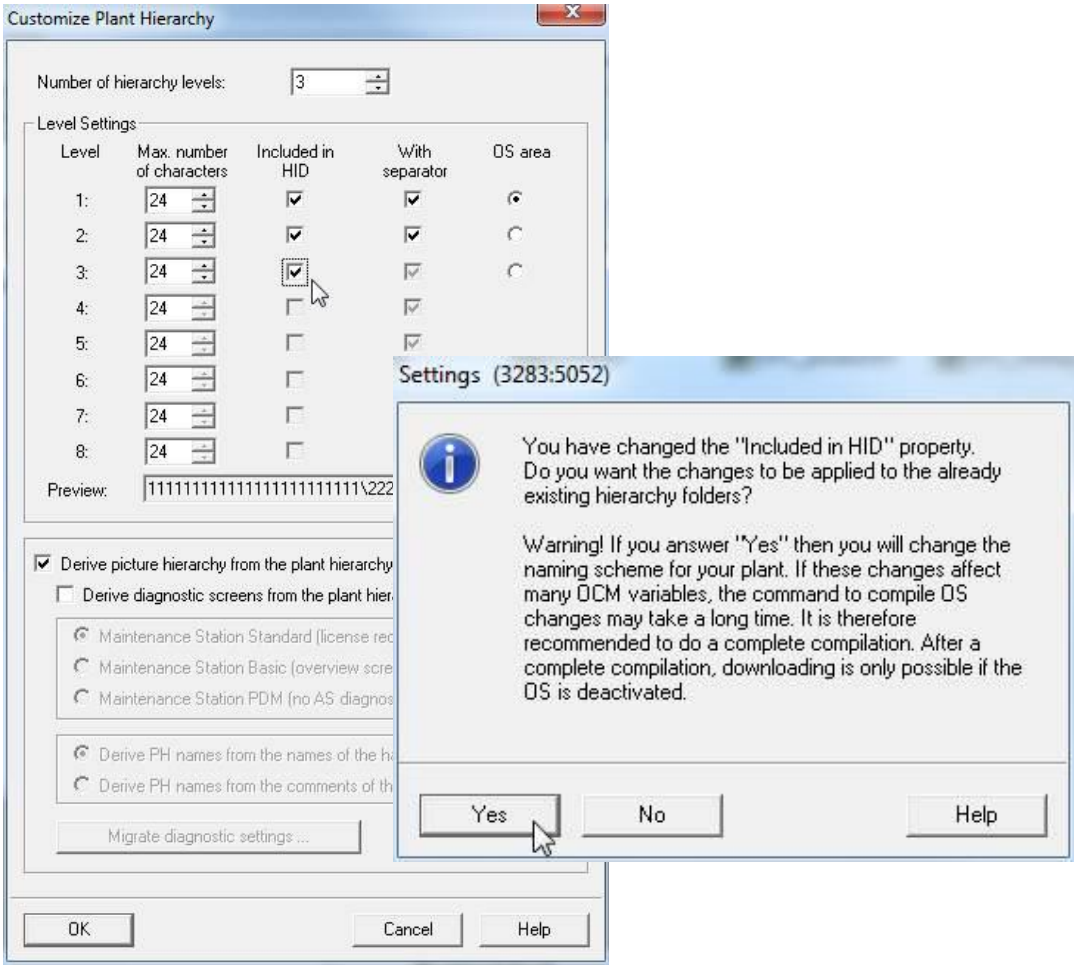
2. Then, adapt the settings of the plant hierarchy to the expansion. (→ Tools → Plant Hierarchy → Settings)



3. The number of hierarchy levels is retained. However, at the third level a checkmark has to be placed at 'Included in HID'; otherwise, there may be problems during simulation. (→ Included in HID → OK → Yes)


Customize Plant Hierarchy
Number of hierarchy levels: 3
Level Settings
Level
Max. number of characters
Included in HID
With separator
OS area
1: 24
2: 24
3: 24
4: 24
5: 24
6: 24
7: 24
8: 24
Preview:
Derive picture hierarchy from the plant hierarchy
Derive diagnostic screens from the plant hier
Maintenance Station Standard (license rec
Maintenance Station Basic (overview scre
Maintenance Station PDM (no AS diagnos
Derive PH names from the names of the h
Derive PH names from the comments of th
Migrate diagnostic settings ...
OK
Cancel
Help
Settings (3283:5052)
You have changed the "Included in HID" property.
Do you want the changes to be applied to the already existing hierarchy folders?
Warning! If you answer "Yes" then you will change the naming scheme for your plant. If these changes affect many OCM variables, the command to compile OS changes may take a long time. It is therefore recommended to do a complete compilation. After a complete compilation, downloading is only possible if the OS is deactivated.
Yes
No
Help

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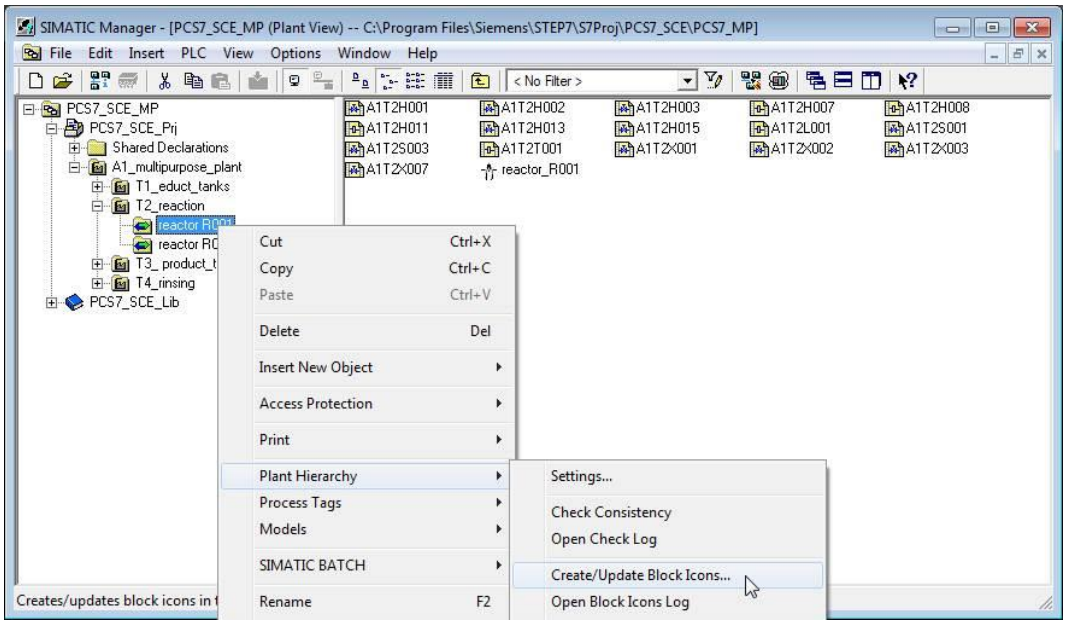
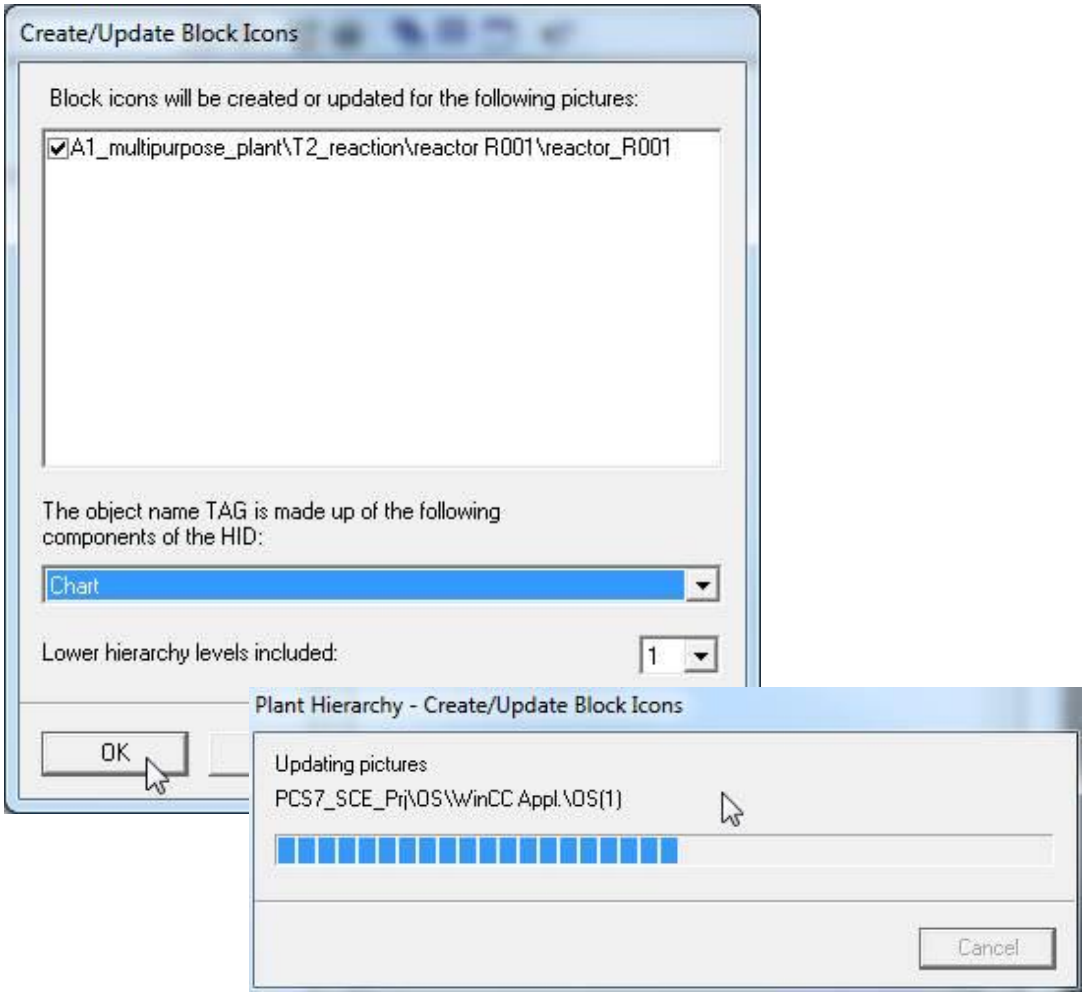
4. Then, the block icons have to be generated in the new picture.

   (→ Reactor R001 → Plant Hierarchy → Create/Update Block Icons)



5. Have the object name created from the chart names and include, as previously, a lower level hierarchy level. (→ Object name: Chart→ Lower hierarchy levels included: 1 → OK)


Create/Update Block Icons
Block icons will be created or updated for the following pictures:
A1_multipurpose_plant\T2_reaction\reactor R001\reactor_R001
The object name TAG is made up of the following components of the HID:
Chart
Lower hierarchy levels included:
1
OK
Plant Hierarchy - Create/Update Block Icons
Updating pictures
PCS7_SCE_Prj\OS\WinCC Appl.\OS(1)
Cancel

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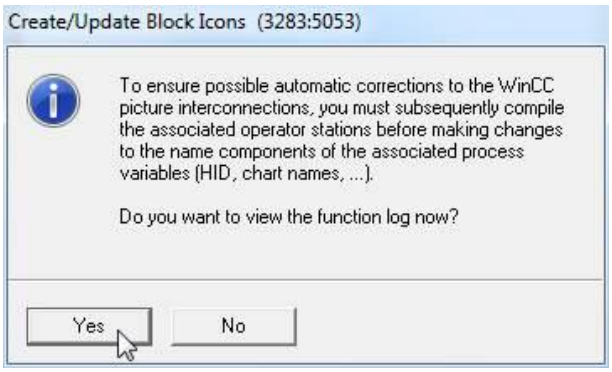
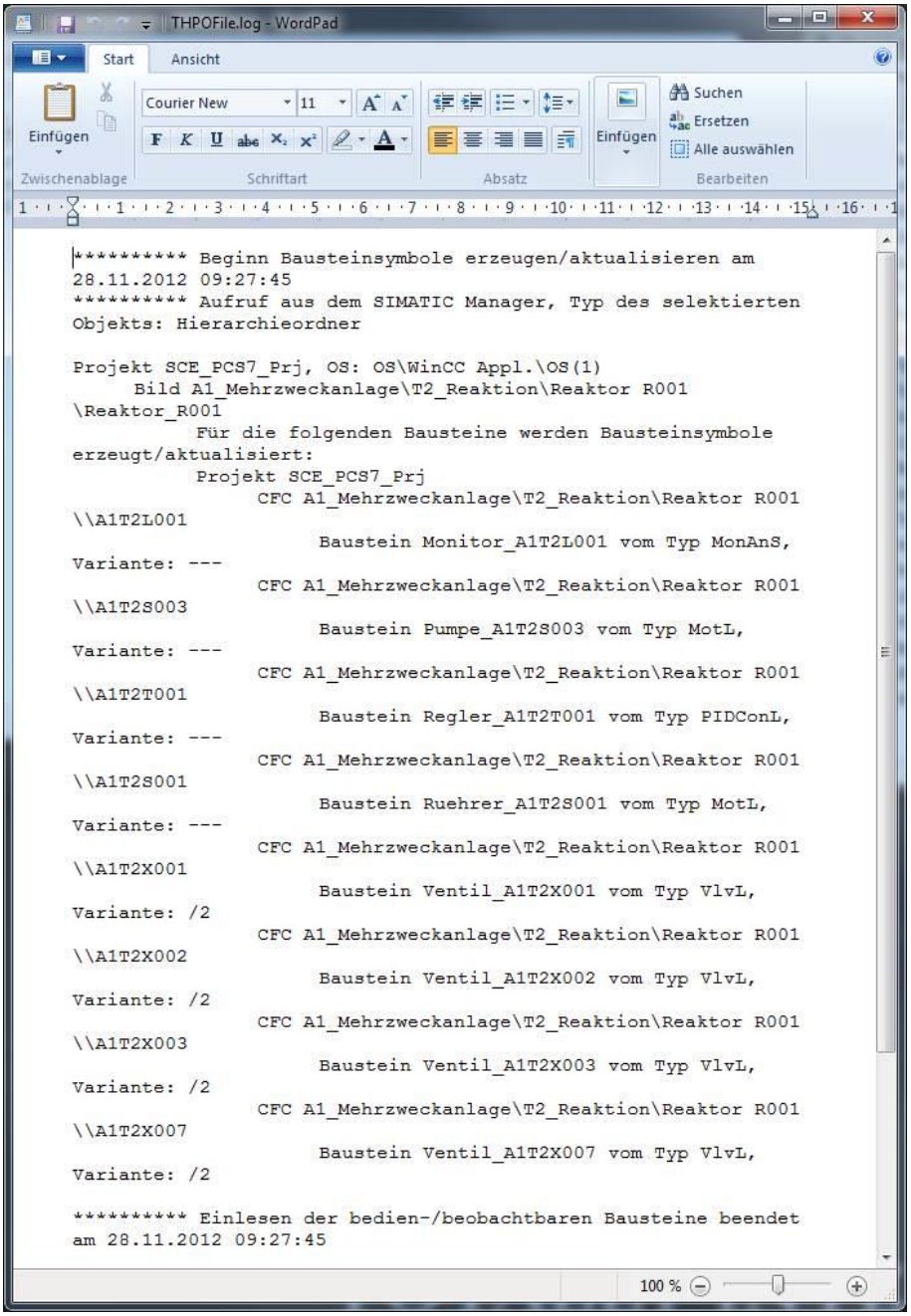
6. Read the note regarding the compilation of the OS due now. The log can also be displayed. Confirm the dialog with 'Yes'. (→ Yes →)


Create/Update Block Icons (3283:5053)
To ensure possible automatic corrections to the WinCC picture interconnections, you must subsequently compile the associated operator stations before making changes to the name components of the associated process variables (HID, chart names, ...).
Do you want to view the function log now?
Yes
No



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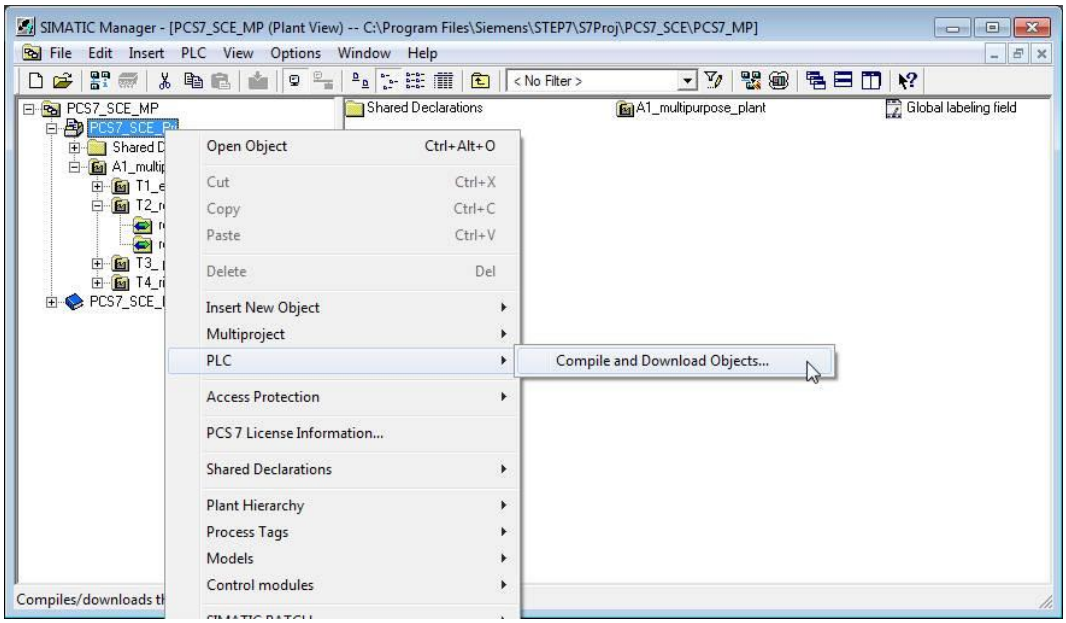
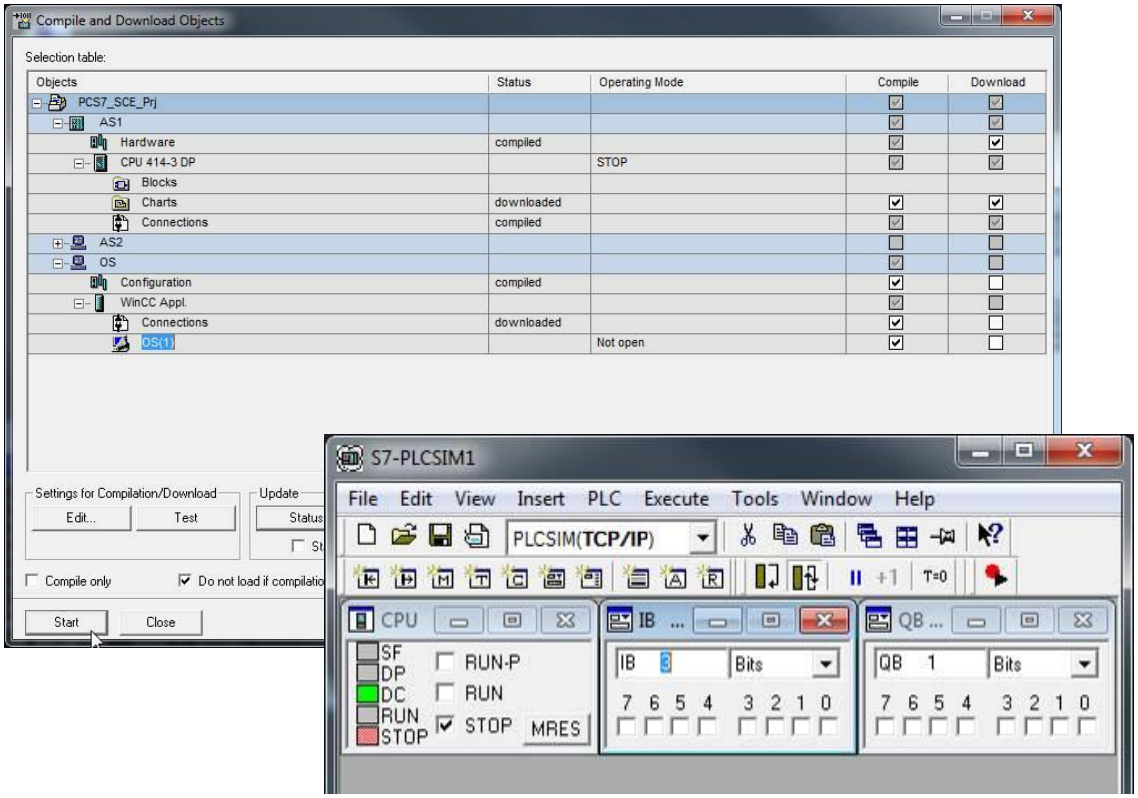
7. Now, once more activate in the ‘Plant View’ Compile and Download Objects.

   (→ SCE_PCS7_Prj → PLC → Compile and Download Objects)



8. Prior to starting the compilation, make sure that S7-PLCSIM is started and the CPU is in the ‘STOP’ mode. Regarding the charts, everything is compiled and downloaded. Regarding the OS, compile the entire OS (a general reset is not necessary) as recommended in Step 3. (→ Start → Close)



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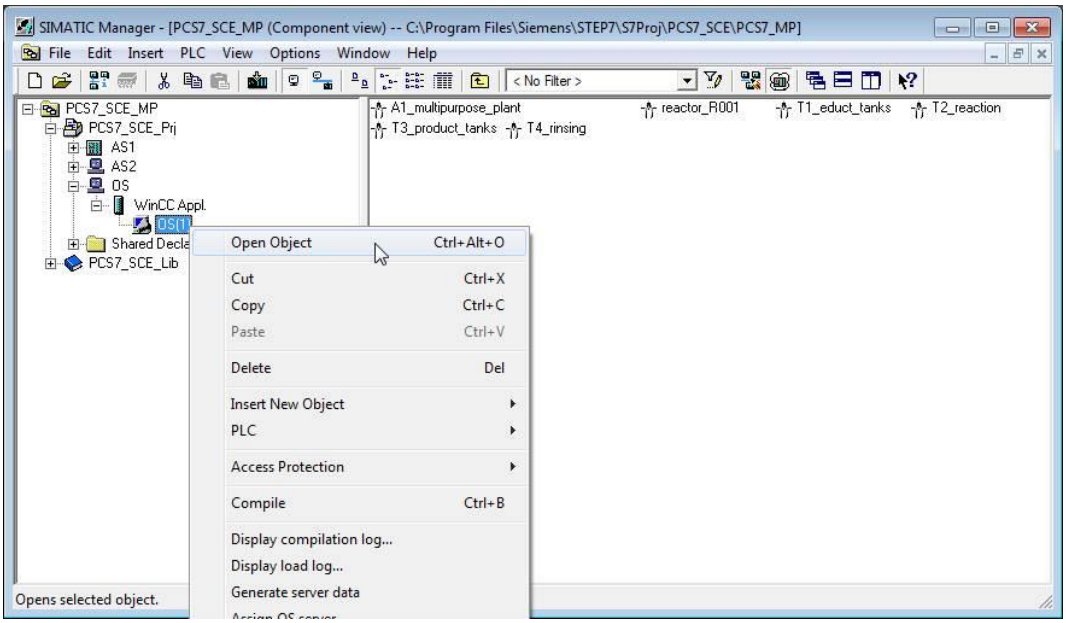
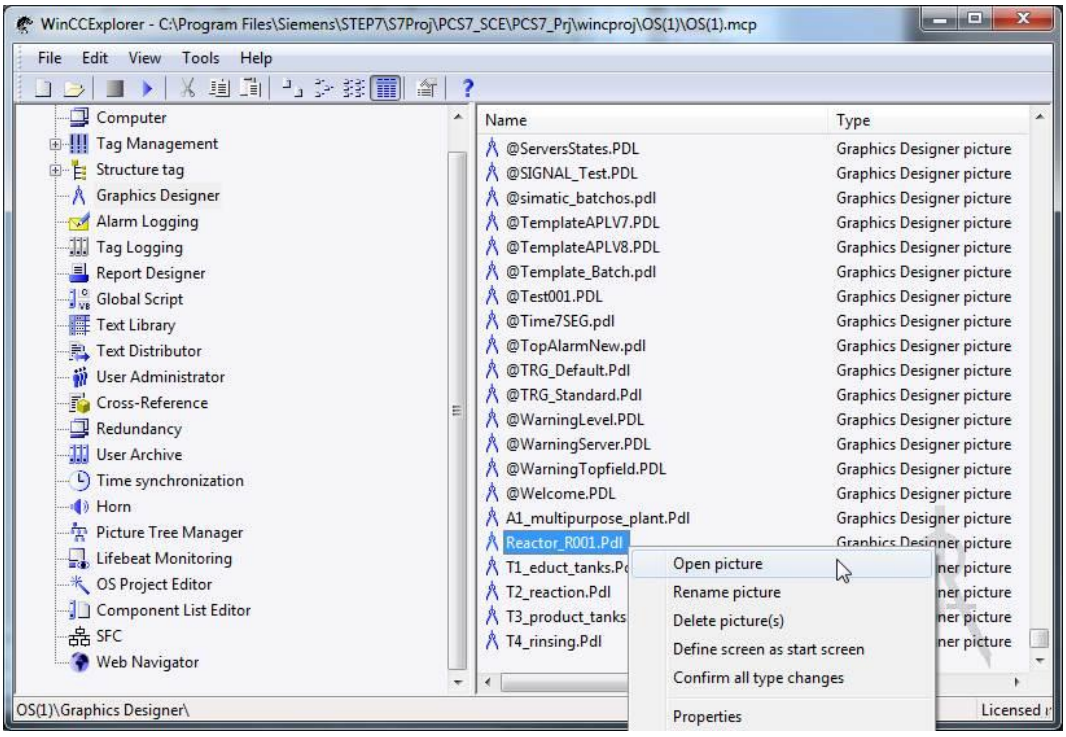
9. Now, in the ‘Component view’, start WinCC by highlighting and opening ‘OS(1)’. (→ OS(1) → Open Object)



10. In the folder ‘Graphics Designer’ open the picture ‘Reactor_R001.Pdl’. (→ Graphics Designer → Reactor_R001.Pdl)



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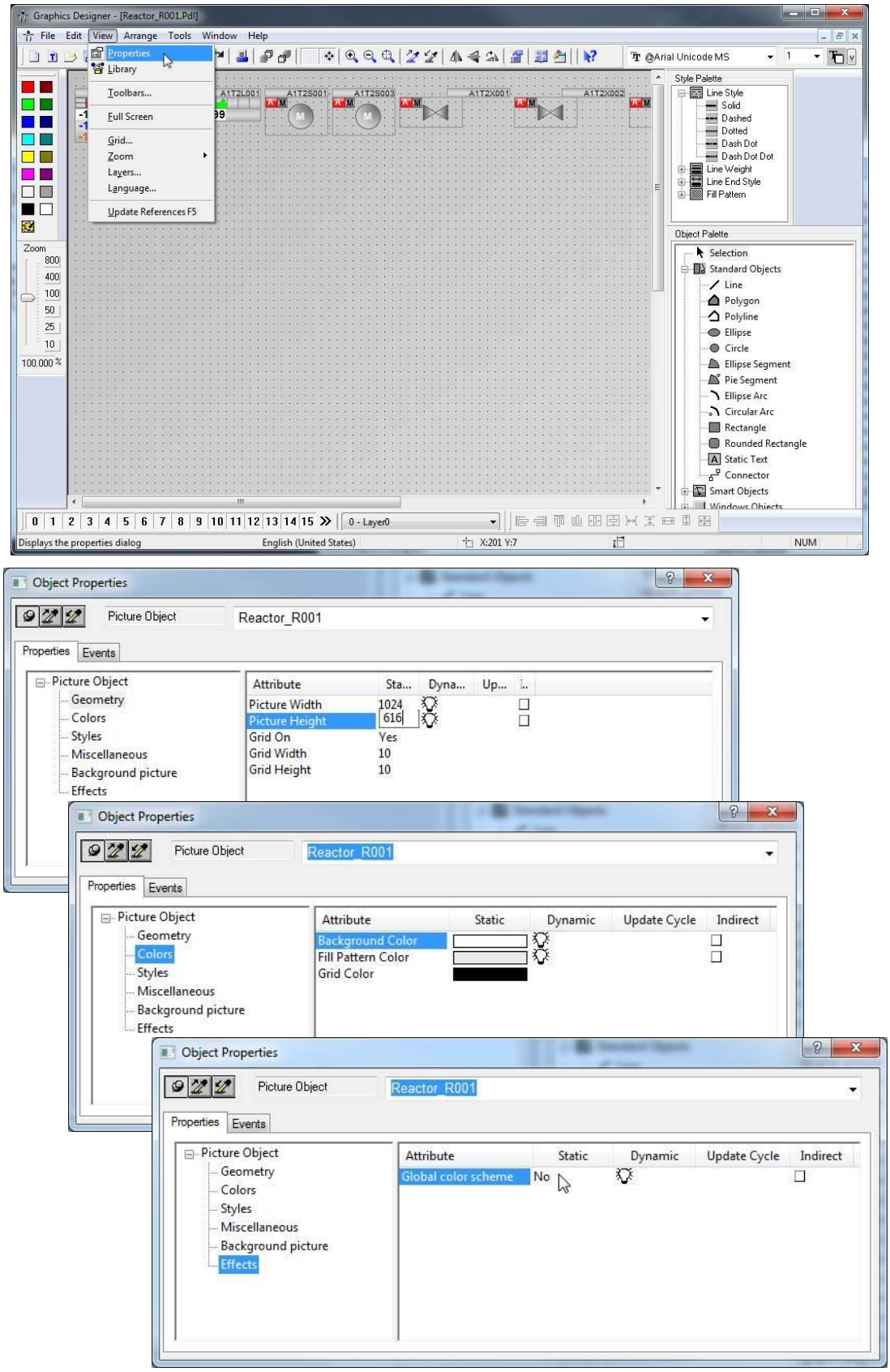
11. Now, in the Object Properties, first change the geometry corresponding to your resolution (for example, 1024x616 at 1024X768) and the background colors to ‘white’. For the color setting to be accepted, the static in the global color scheme has to be switched to ‘No‘. (→ Object Properties → Colors → Background color → white → Effects → Global Color scheme → No)



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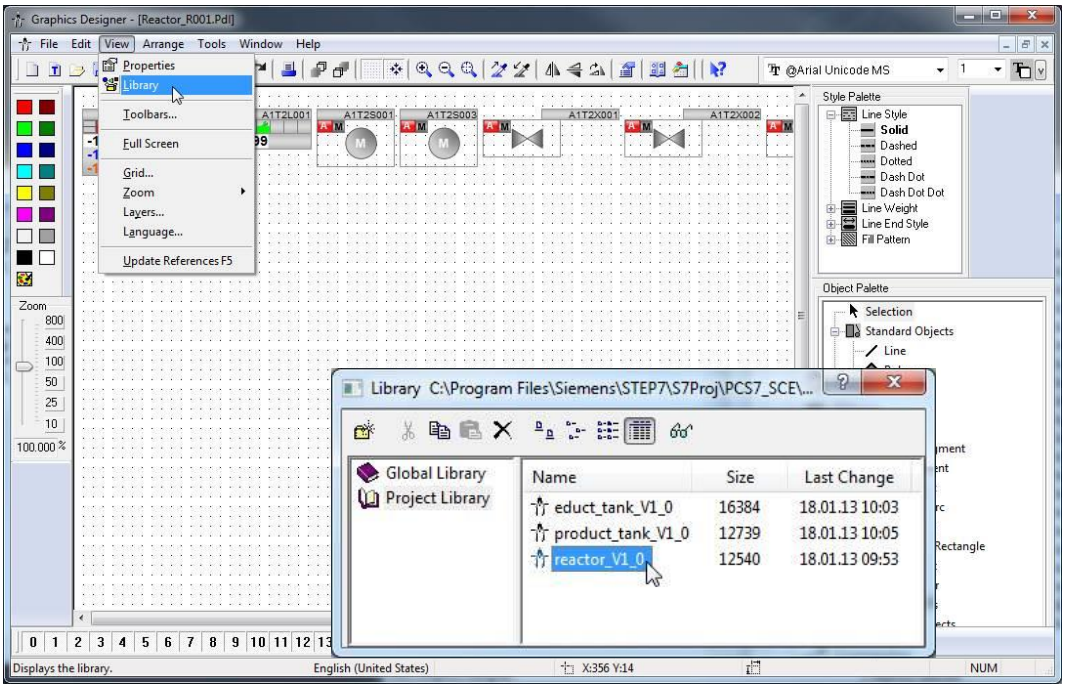
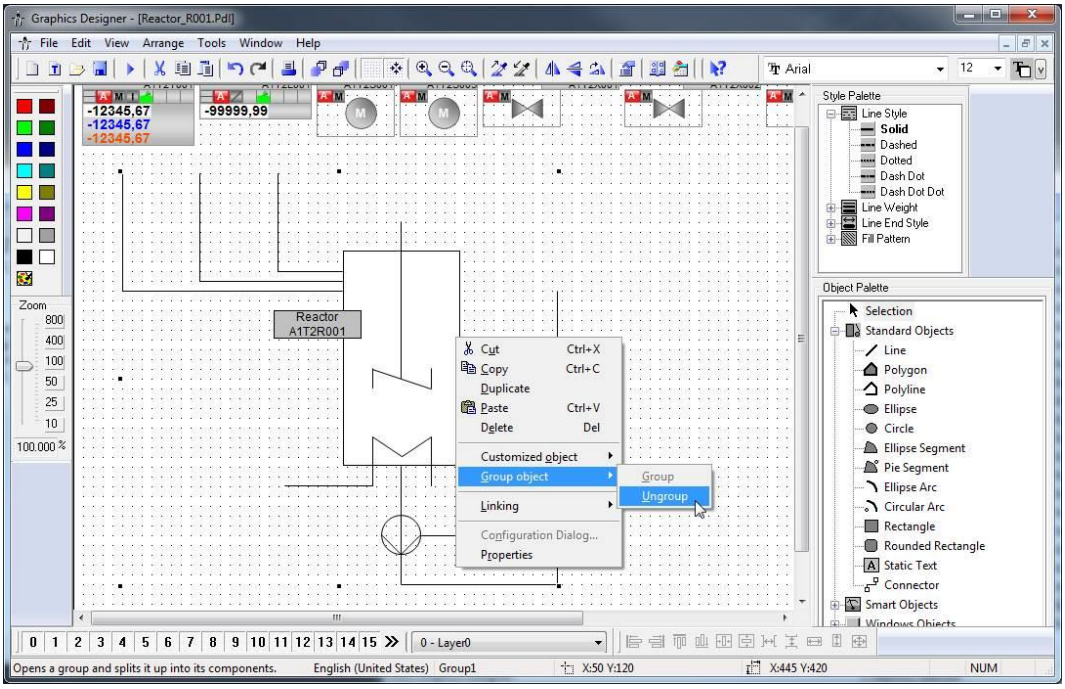
12. Next, from the project library, drag in the face plate for reactor R001. (→ View → Library → Project Library → Reactor_V1_0)



13. In the picture 'Reactor_R001.Pdl', ungroup the group with the reactor in the center. (→ Group → Ungroup)



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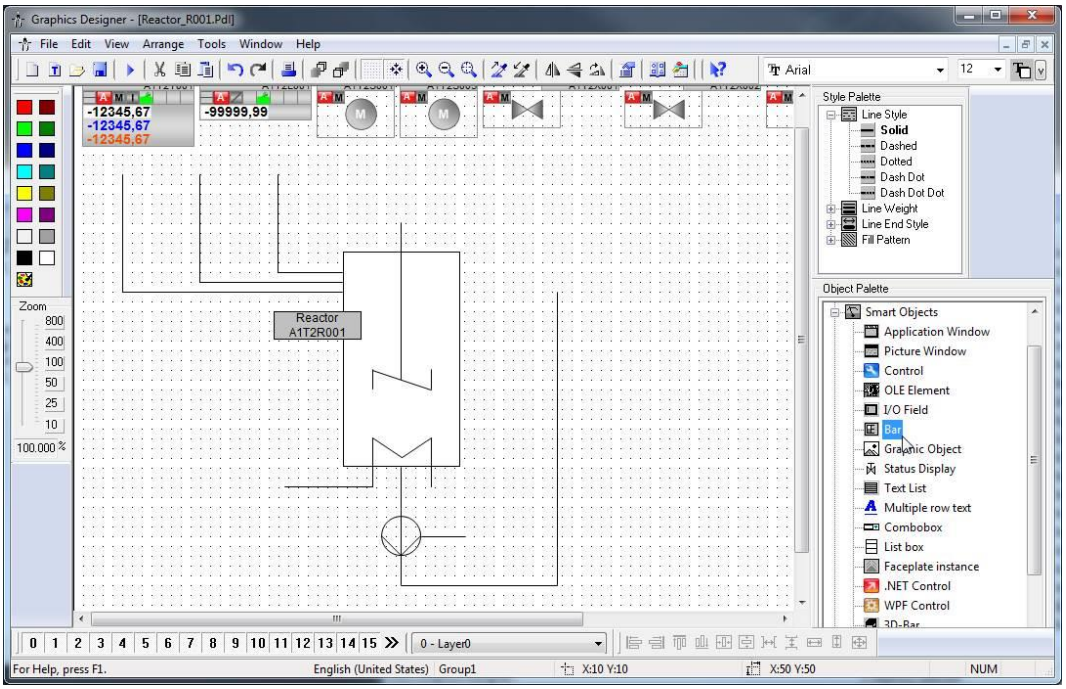
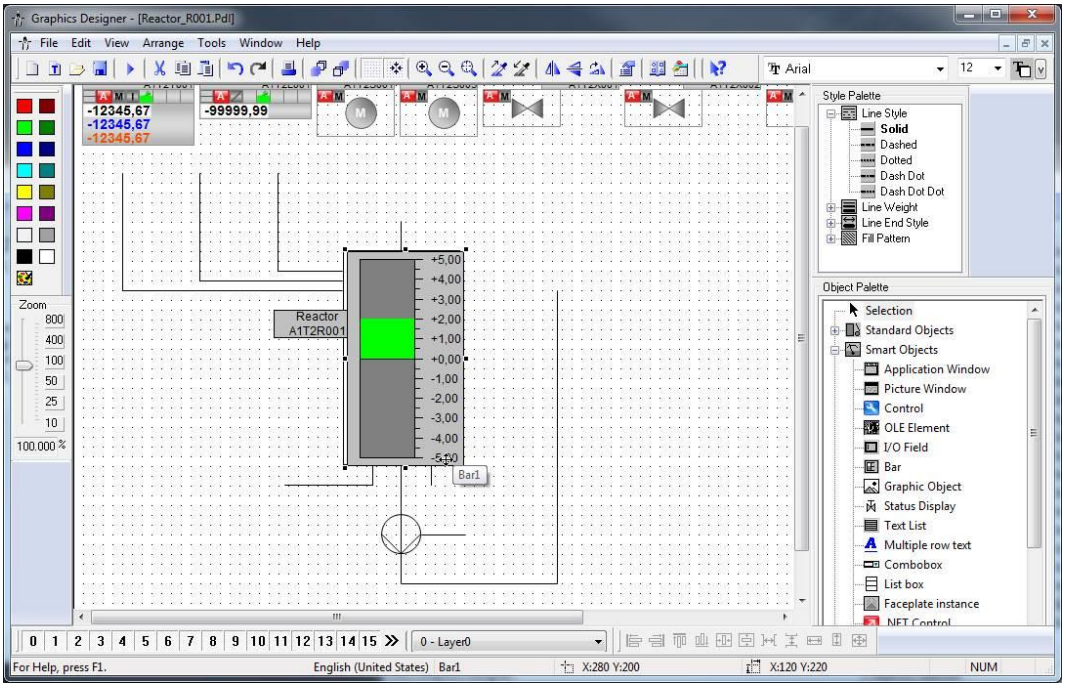
14. Next, select in the object palette Smart objects and then ‘Bar‘. Then position the bar over the reactor tank.

    (→ Object Palette → Standard → Smart Objects → Bar)





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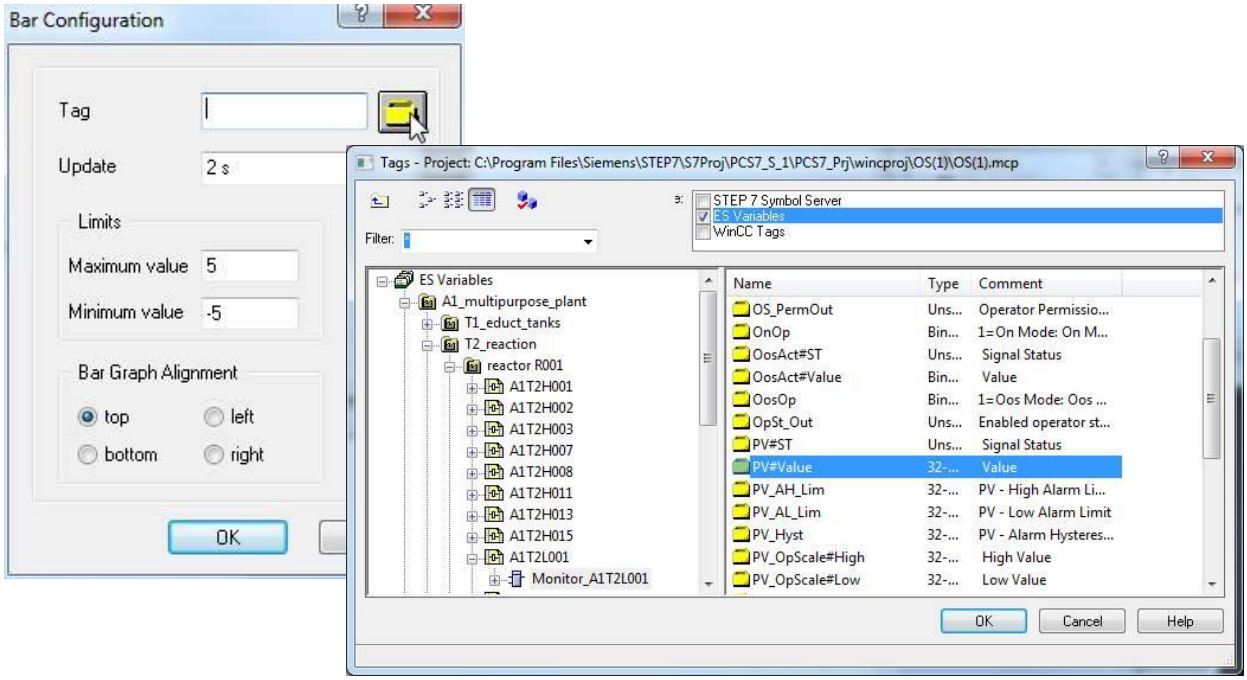
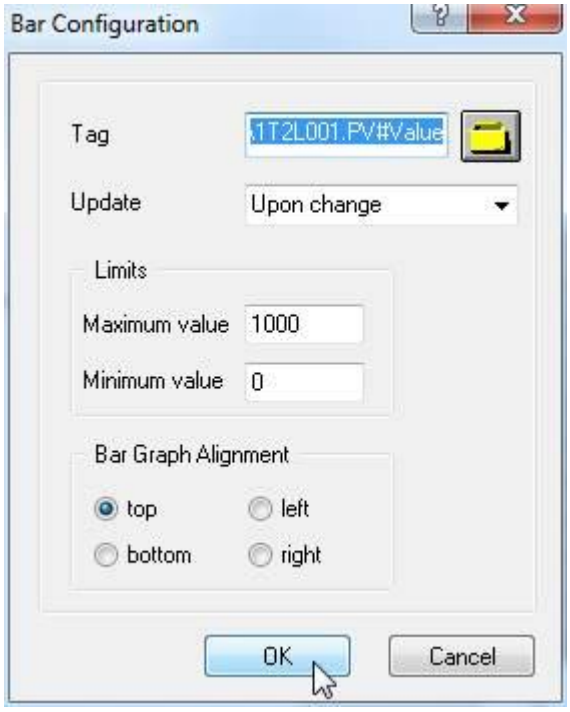
15. Now, in the configuration dialog, open the tag selection and as data source the ES variables; then open the hierarchy ‘A1_multipurpose_plant/T2_reaction/reactor R001/ A1T2L001/A1T2L001/Monitor…‘. On the right side, select the tag ‘PV#Value‘.

    (→ ES Variables → A1_multipurpose_plant/T2_reaction/reactor R001/A1T2L001/ Monitor_A1T2L001/PV#Value → OK)



16. Next, select the maximum and minimum value, (→ Update: Upon change → Maximum value: 1000 → Minimum value: 0→)



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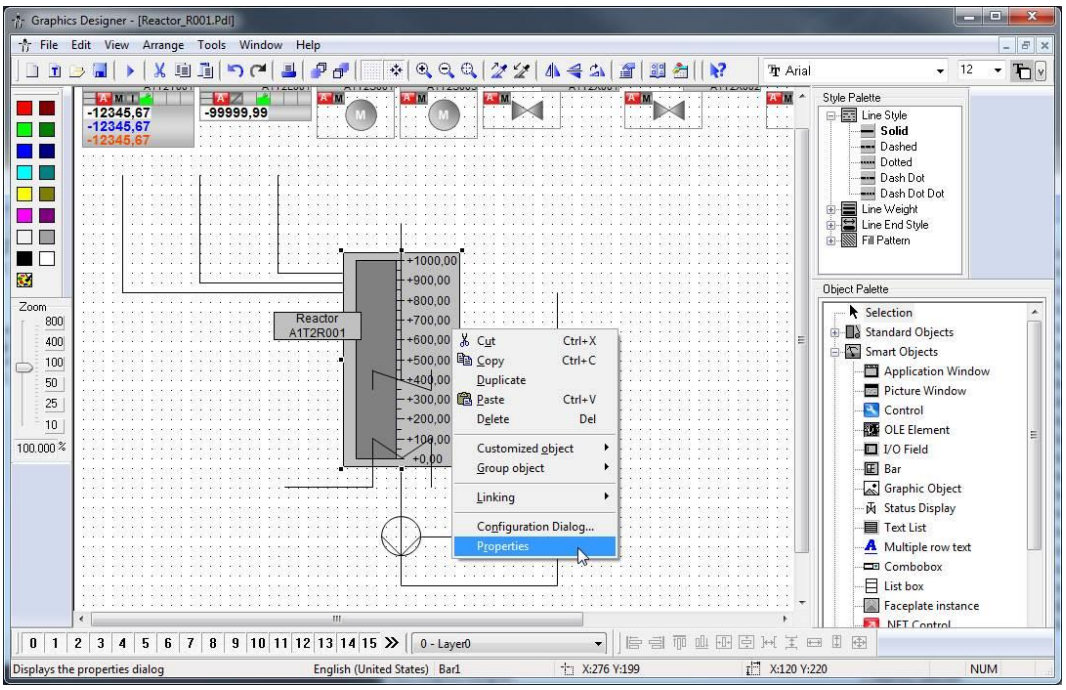
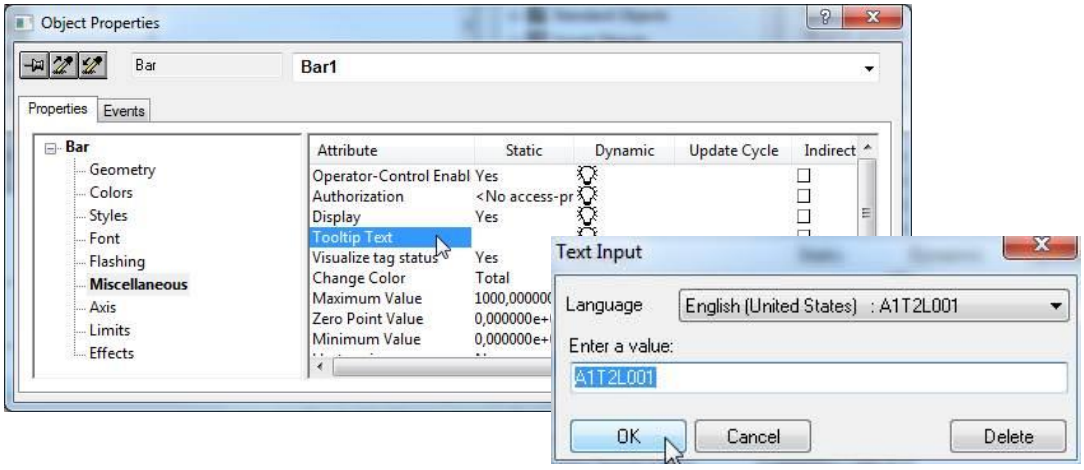
17. Now, the display is positioned exactly over the reactor and some levels are moved to the back (Arrange → Within the level → One to back) for the stirrer, the heater and the labeling to be visible again; then open the Properties for additional adaptations. (→ Properties)



18. In the ‘Properties’ change to ‘Other‘ the 'TooltipText‘ in ‘A1T2L001‘. (→ Properties → Other → Tooltip Text → A1T2L001 (→ OK)



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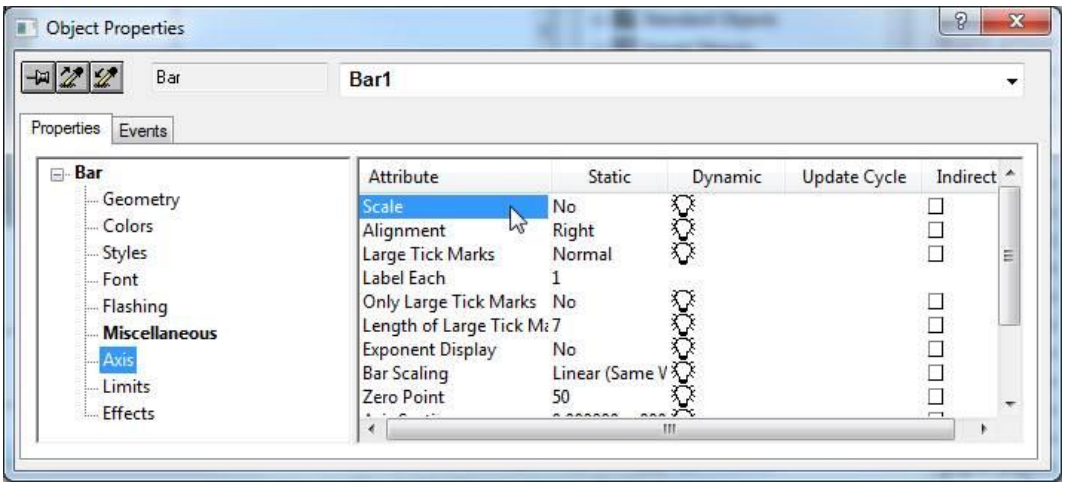
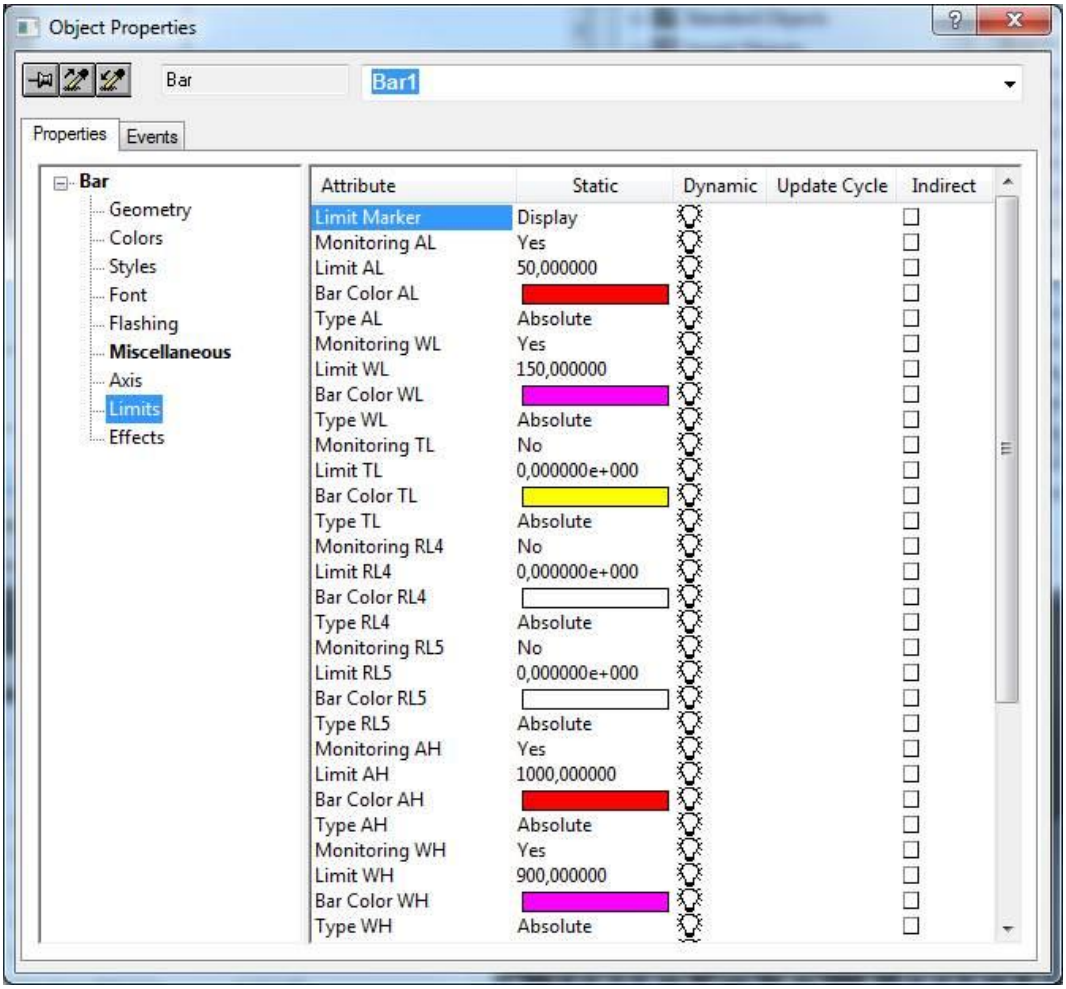
19. Then, select ‘Axis‘. Here, set the attribute ‘Scale‘ to ‘No‘.



20. In ‘Limits‘, specify the known low and high limit, their monitoring and the color of the bars if the limit is exceeded. (→ Properties → Bar → Limits → Low/high limit: refer to display/Monitoring: Yes →)



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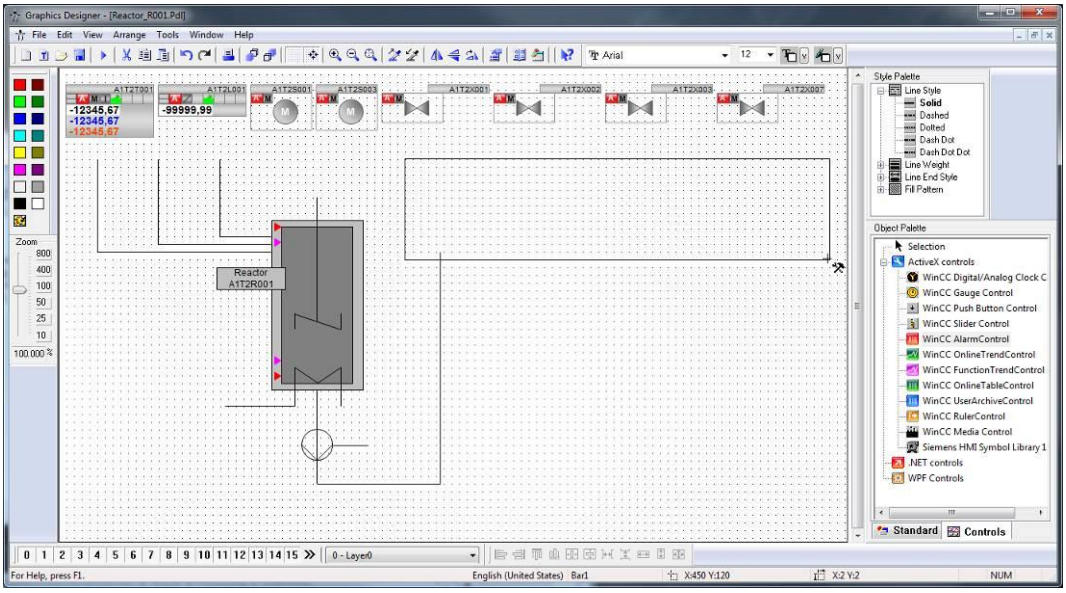
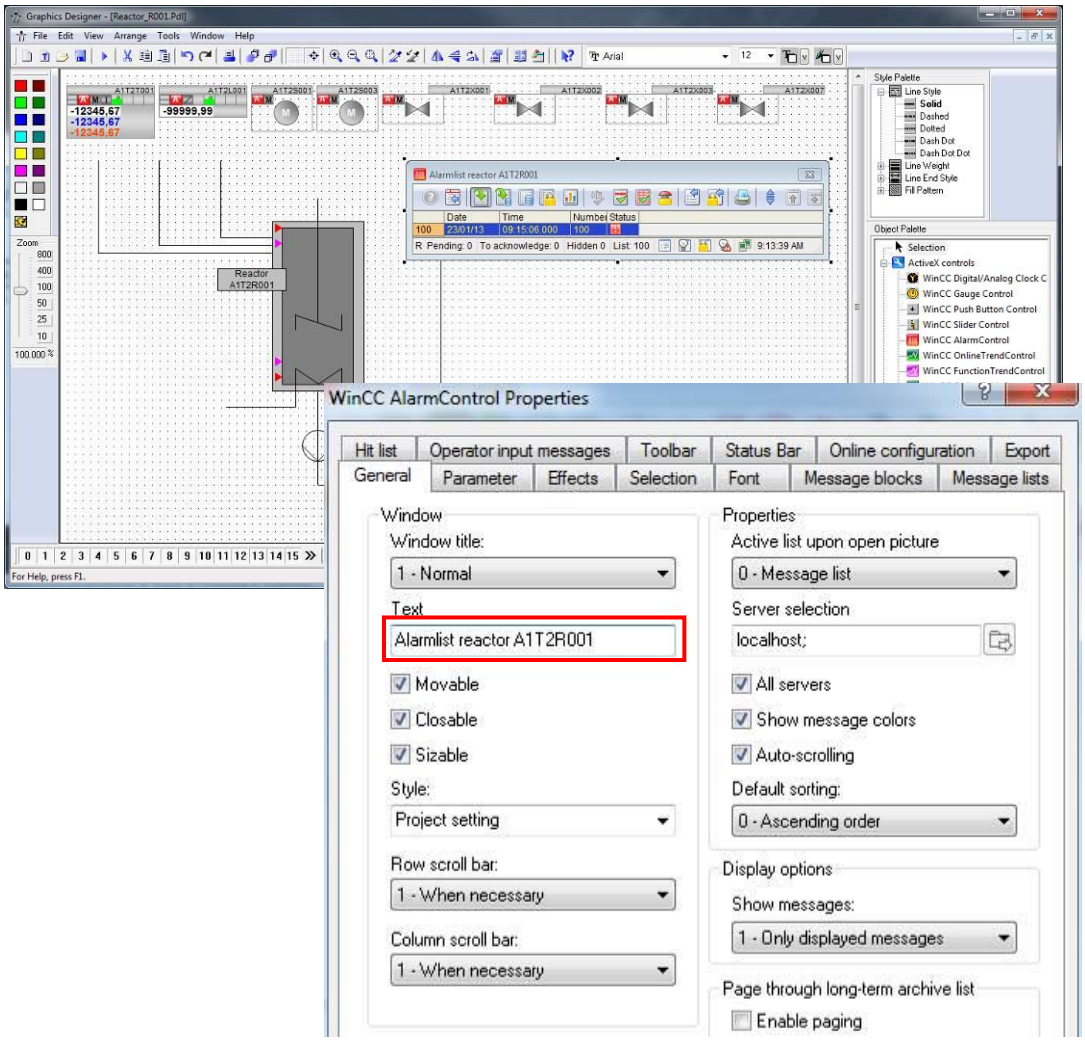
21. In the object palette, under the tab ‘Control‘ select the WinCC AlarmControl. Then draw a rectangle with the mouse. (→ Object palette → Controls → WinCC AlarmControl)



22. Next, in the property dialog that is displayed automatically only change the text for window title to ‘Alarmlist reactor A1T2R001’. (→ General → Text: Alarmlist reactor A1T2R001)



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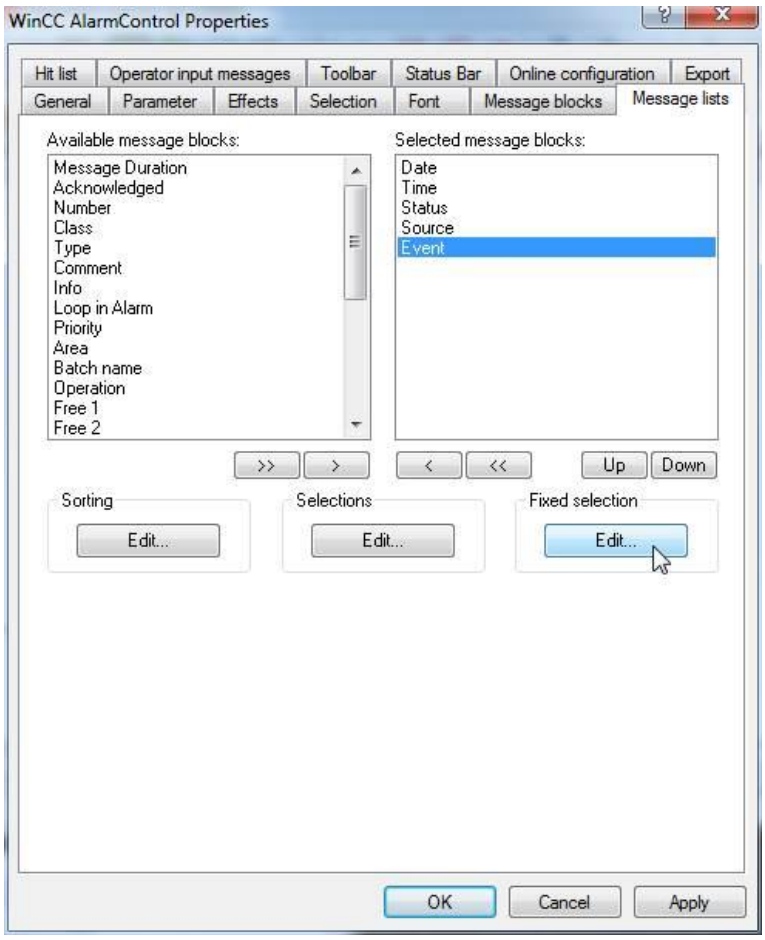
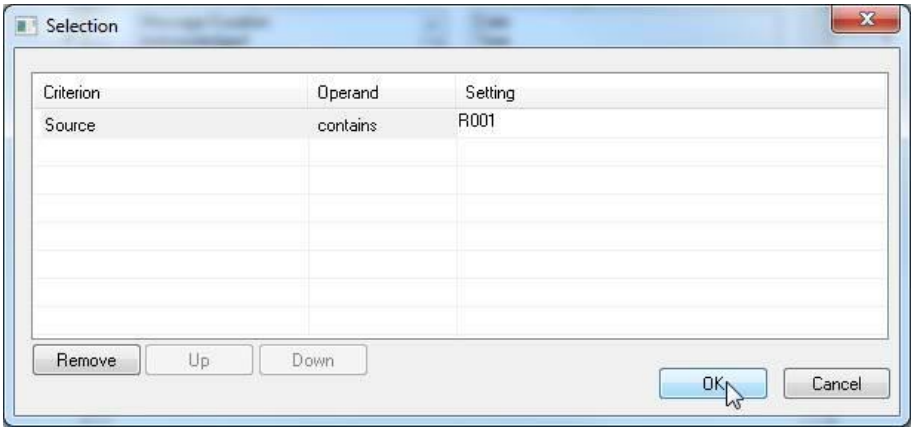
23. In the tab ‘Message lists‘ select -as shown here- the ‘Message blocks’. Make the selection by adding message blocks with the buttons [>>] [>]; message blocks are removed with the buttons [<] [<<]. So that only the alarms are displayed that match the picture, select ‘Fixed selection’.

    (→ Message lists → [>>] [>] → [<] [<<] → Fixed selection: Edit)



24. In the screen display below select as 'Criterion‘ the source, for Operand ‘contains’ and for Setting the text ‘R001’ as shown. (→ Criterion: Source → Operand: contains → Setting: R001 → OK)



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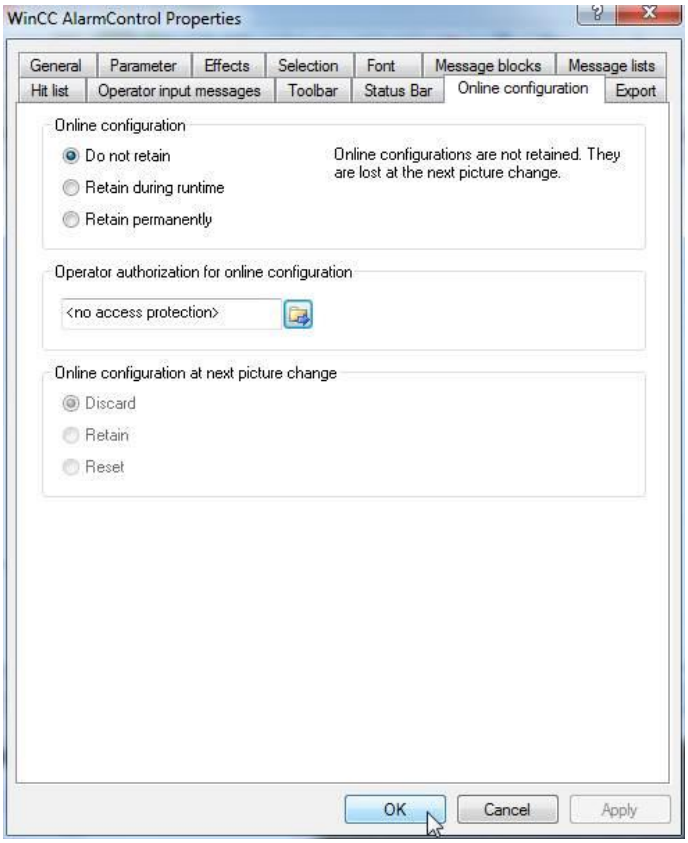
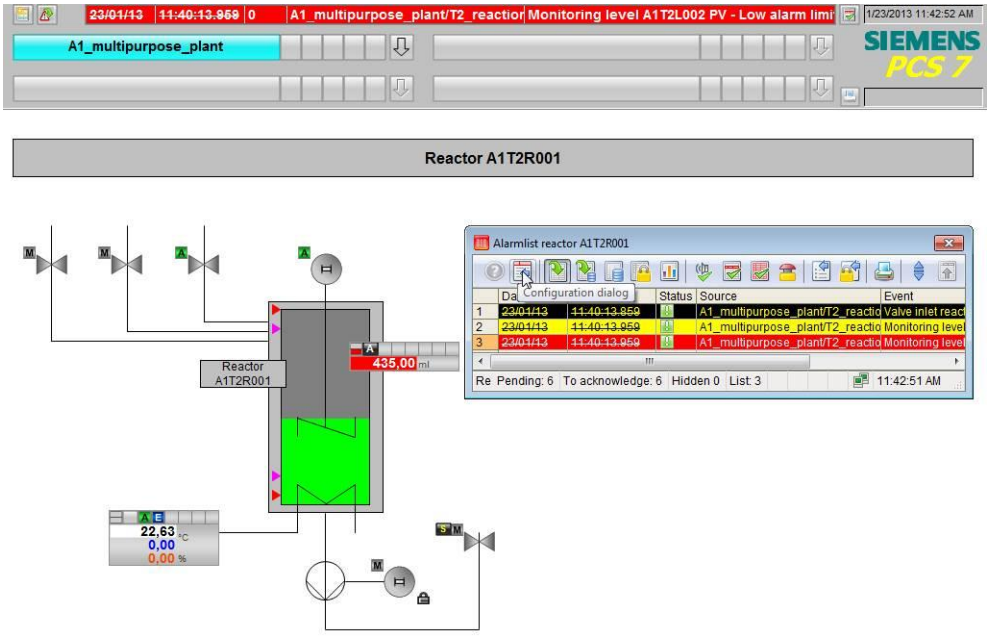
25. Now, under ‘Online configuration’, select that the setting changes are not retained during runtime.

    (→ Online configuration → Online configuration: Do not retain → OK)



26. In runtime of the PCS7 project, the alarms are now displayed in the picture ‘Reactor_R001’. Using the icon the configuration can be changed; however, it is lost after a picture change.



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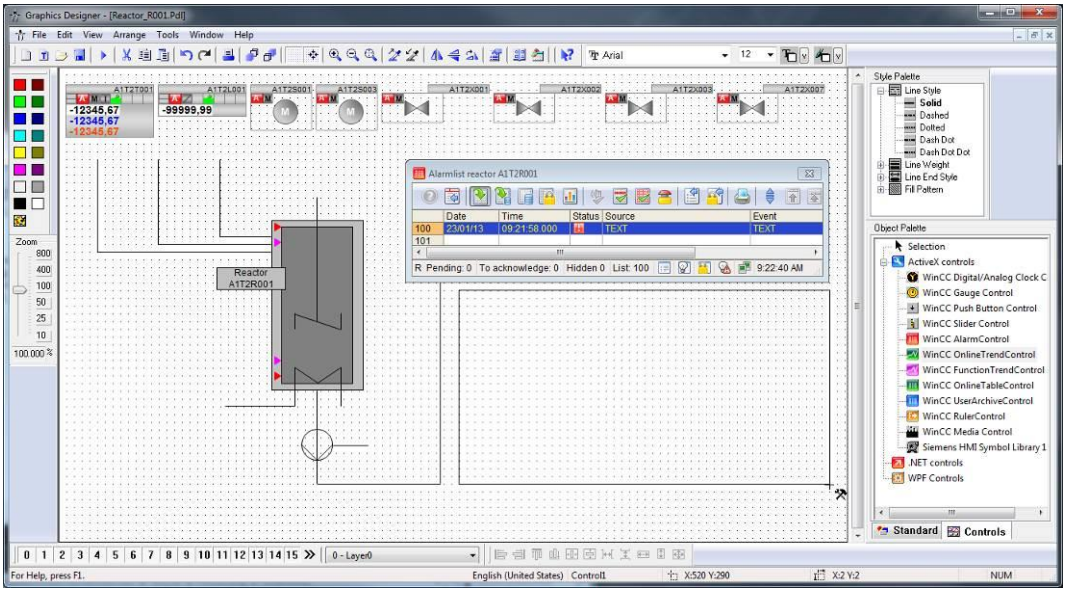
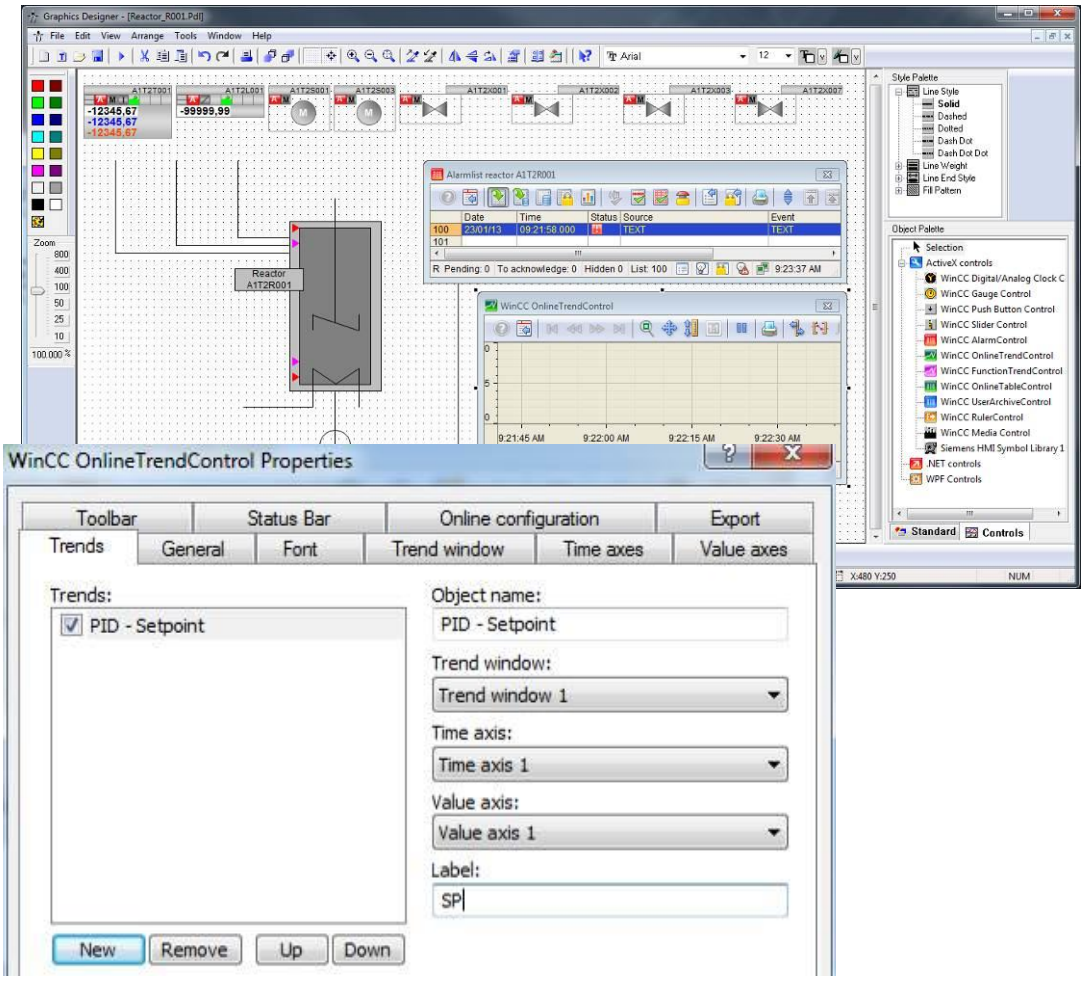
27. Next, select from the object palette, under the tab ‘Control‘, the WinCC OnlineTrendControl. Then, draw a rectangle with the mouse to position the window for the curve view. (→ Object palette→ Controls → WinCC OnlineTrendControl)



28. In the configuration dialog that is displayed automatically, at ‘Trends’ first change the object name of ‘Trend 1‘ to ‘PID – Setpoint‘. (→ Trends → Object name → ‘PID – Setpoint‘)



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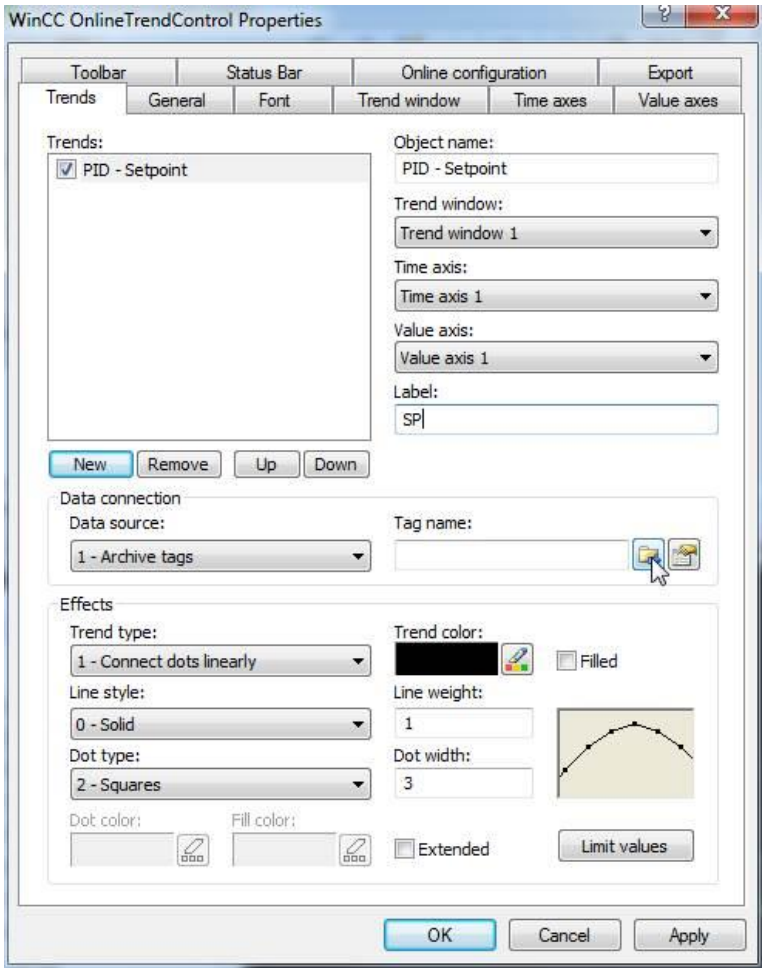
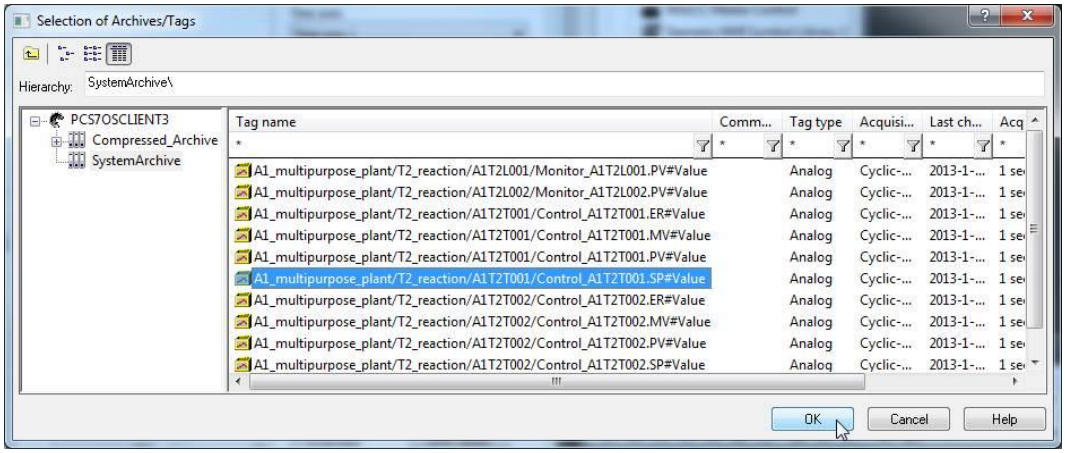
29. Next, link the trend to an archive tag by clicking on the button and then select the setpoint SP#Value of A1T2T001. (→ Tag name → → SystemArchive → ..ControlA1T2T001.SP#Value)





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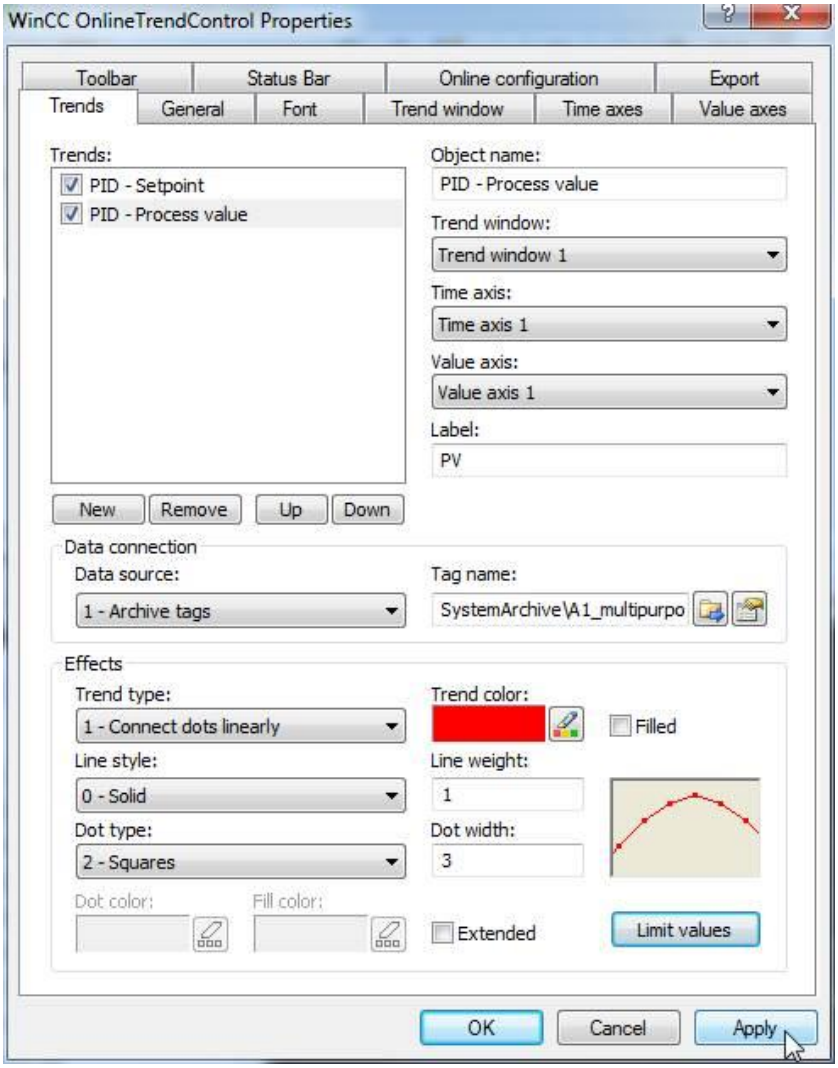
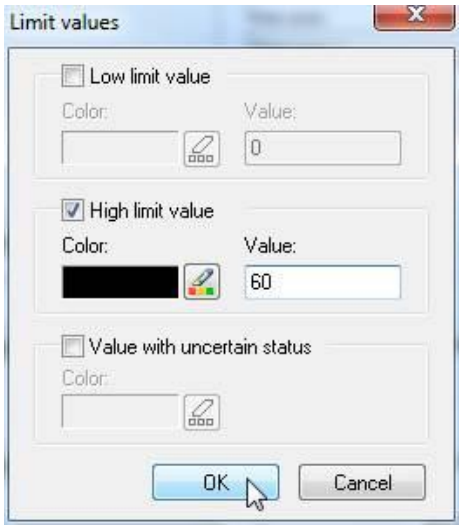
30. Now add another trend and apply the settings shown. (→ Trends → New → Object name: 'PID – actual value' → Name: PV → Tag name: Control_A1T2T001.PV#Value → Limits→ High limit: 60 → Apply)





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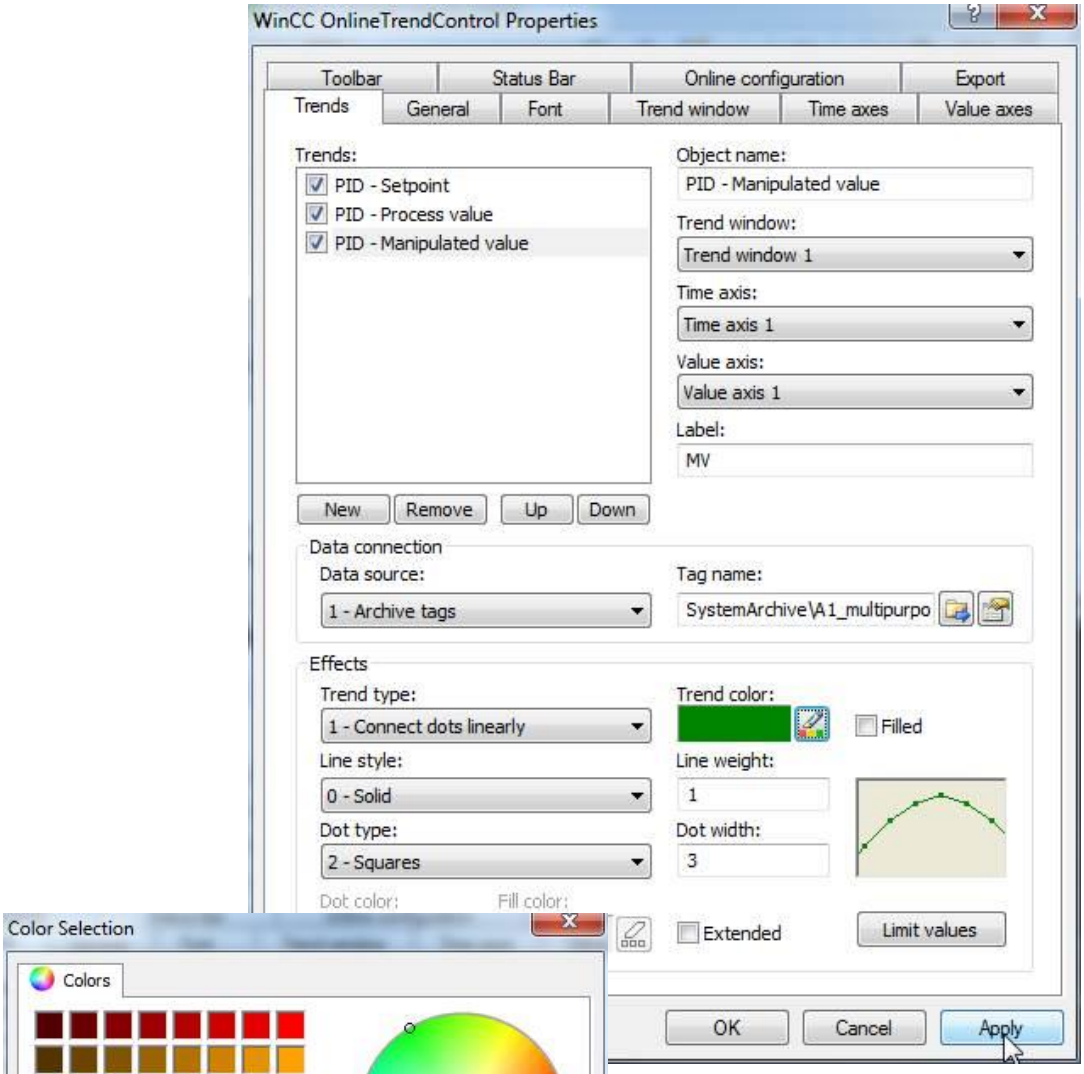
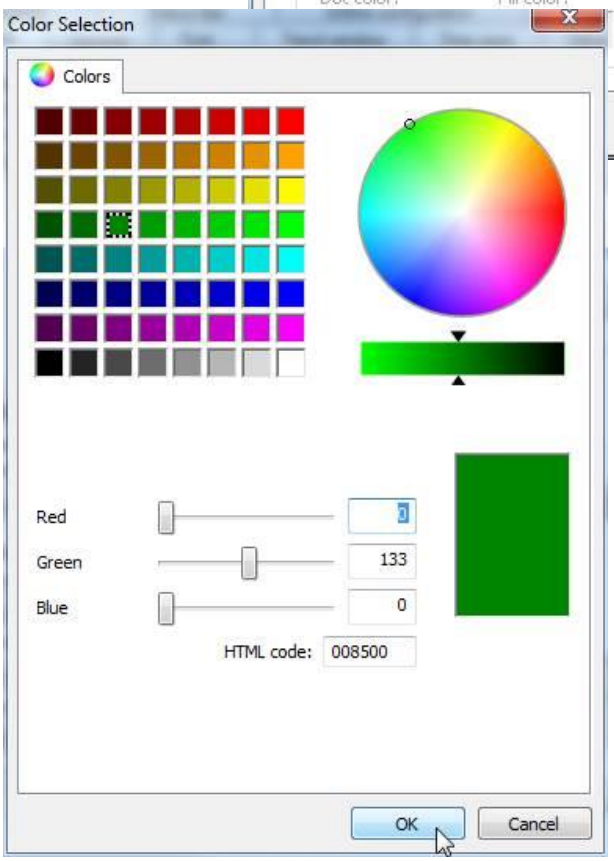
31. The next trend is the manipulated value; it has the following settings. (→ Trends → New → Object name: 'PID – Manipulated value' → Name: MV → Tag name: Control.MV#Value → Trend color: green → OK → Apply)





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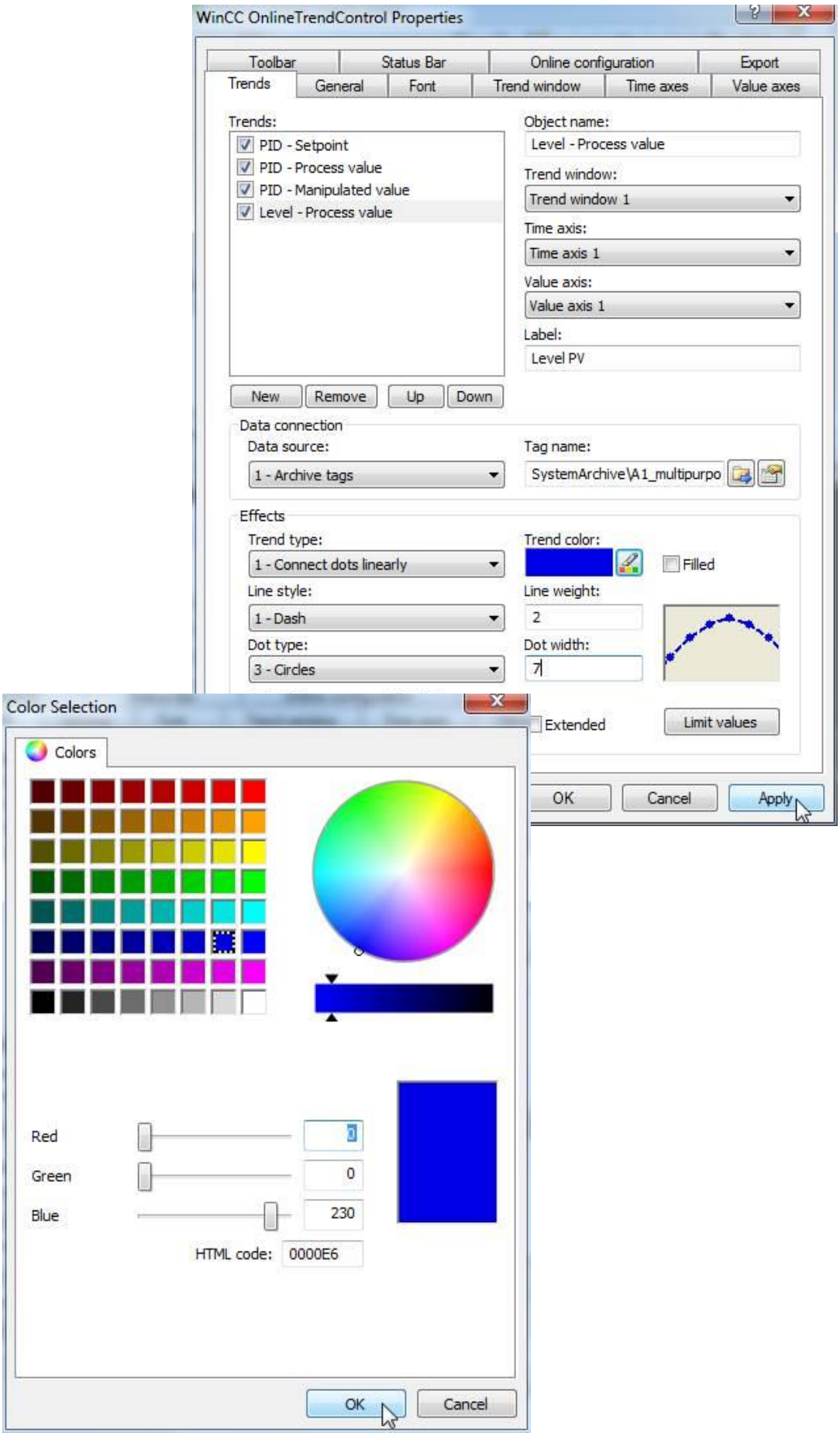
32. The last trend we add is the level A1T2L001.



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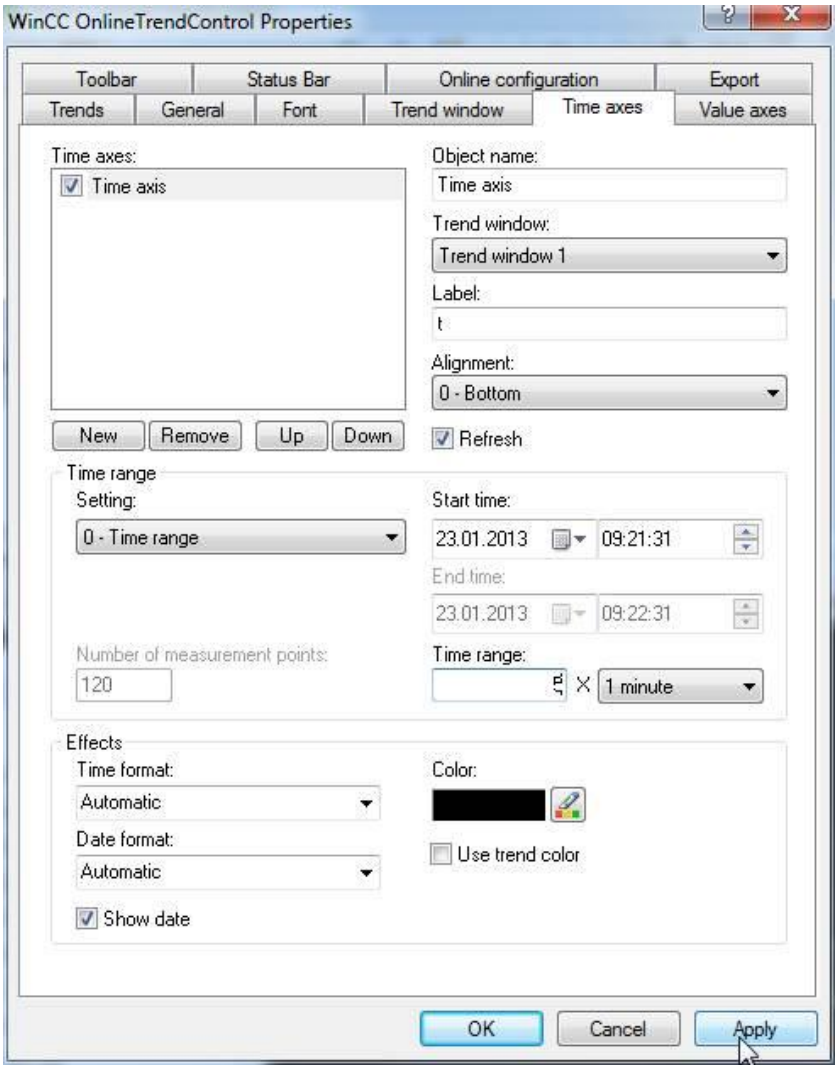
33. Now change to the tab Time axes. There, set the parameters shown. (→ Time axes → Object name: Time axis → Label: t → Time range: 5 x 1 minute)



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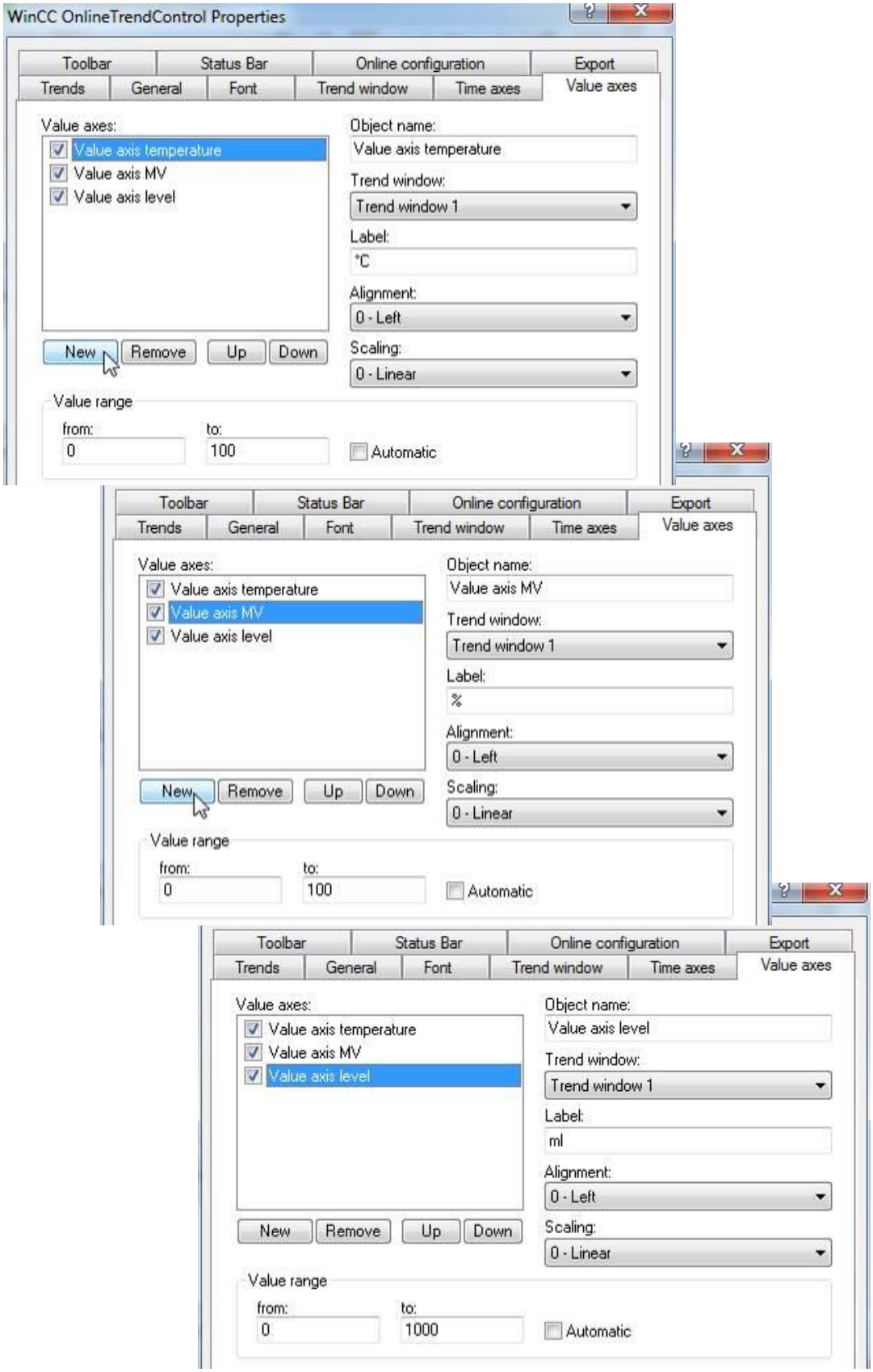
34. Then, in the register Value axes, set up three value axes: one for the temperature values of 0 .. 100°C, one for the manipulated value 0 .. 100% and one for the level of 0 .. 1000 ml. (→ Value axes → Object name: Value axis Temperature → Label: °C → Value range: automatic → New → …)



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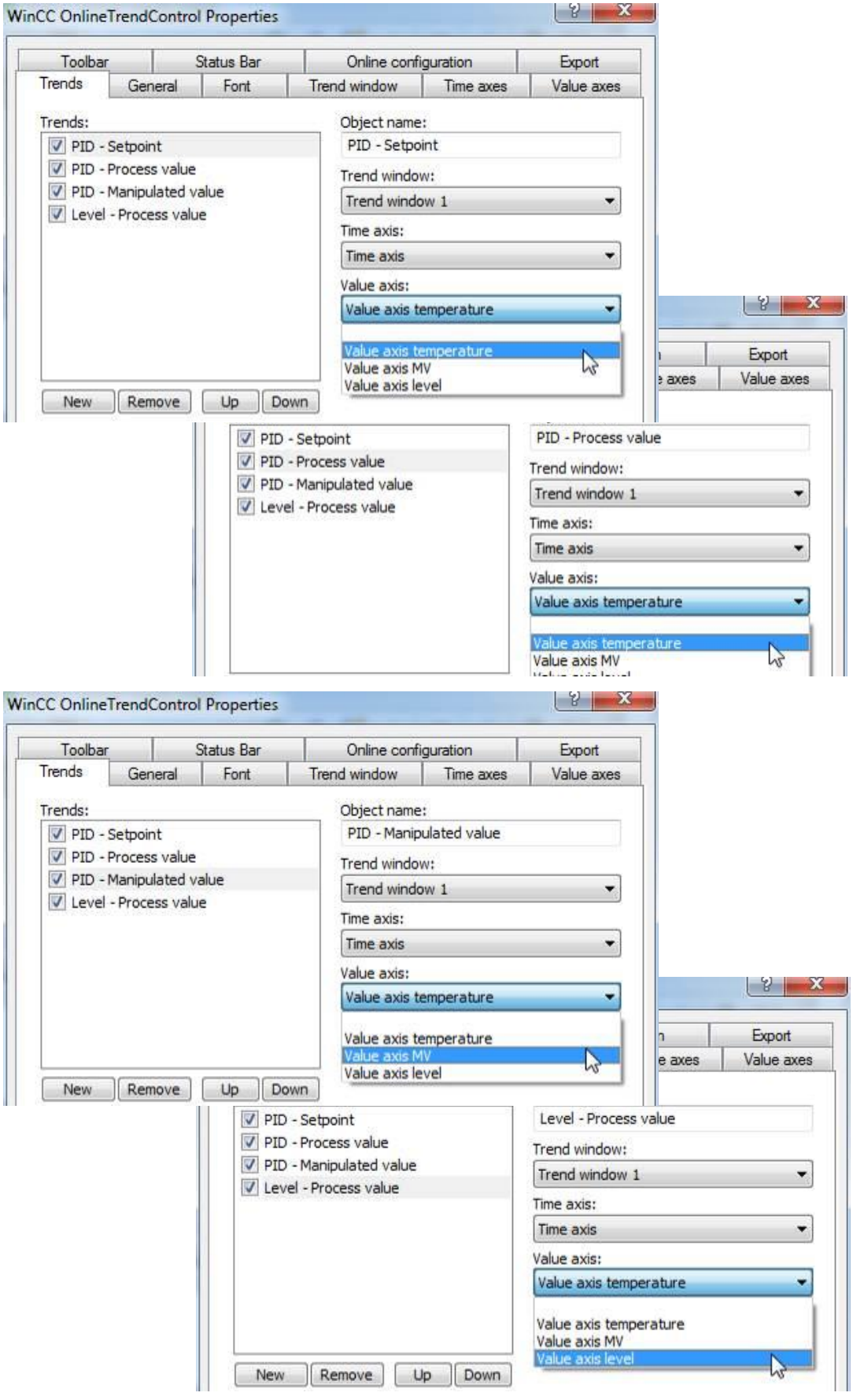
35. Now we assign the value axes to the trends. (→ Trends → PID – Setpoint: Value axis Temperature → PID - Process value: Value axis Temperature → PID Manipulated value: Value axis Manipulated variable → Level: Value axis Level → OK)



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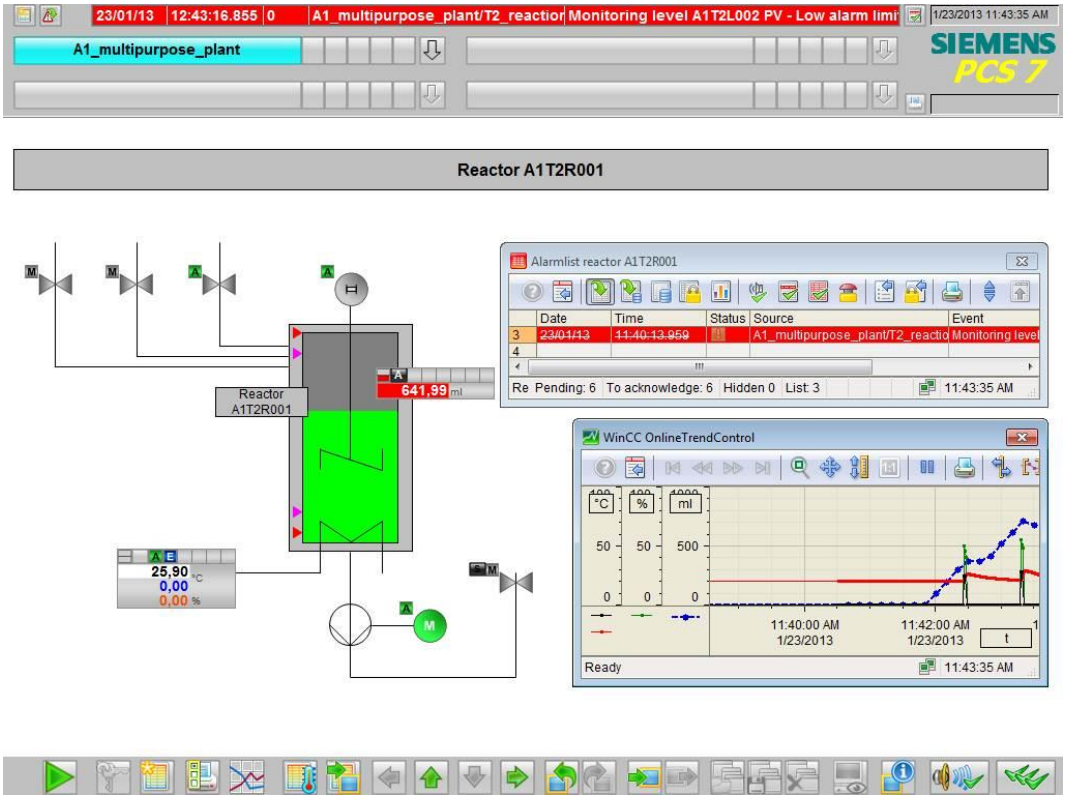
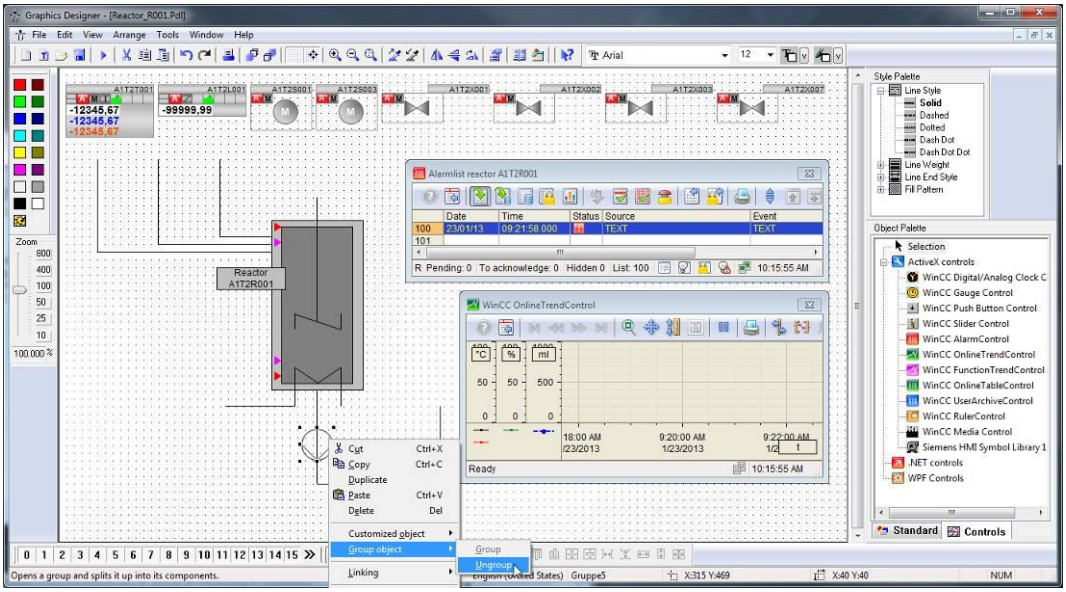
36. During the runtime of the PCS 7 project, the following trend is displayed in the picture ‘Reactor_R001’.



37. The steps below show how a number of objects can be grouped into a single ‘User defined object’. First, however, it is important that none of the included objects has been grouped. If such groups exist, they have to be ungrouped.

    (→ Group → Ungroup)



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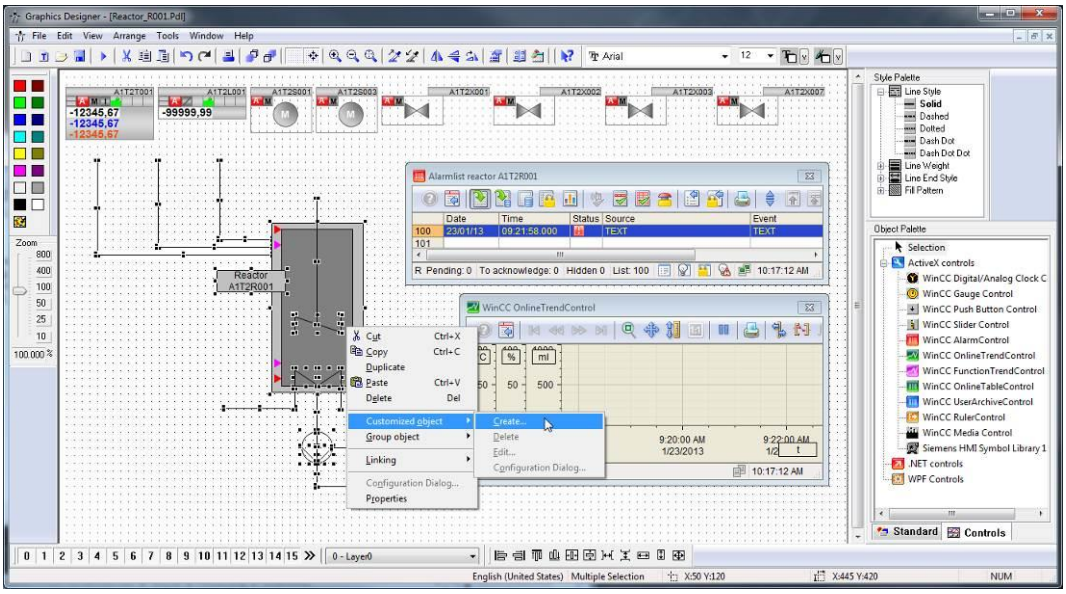
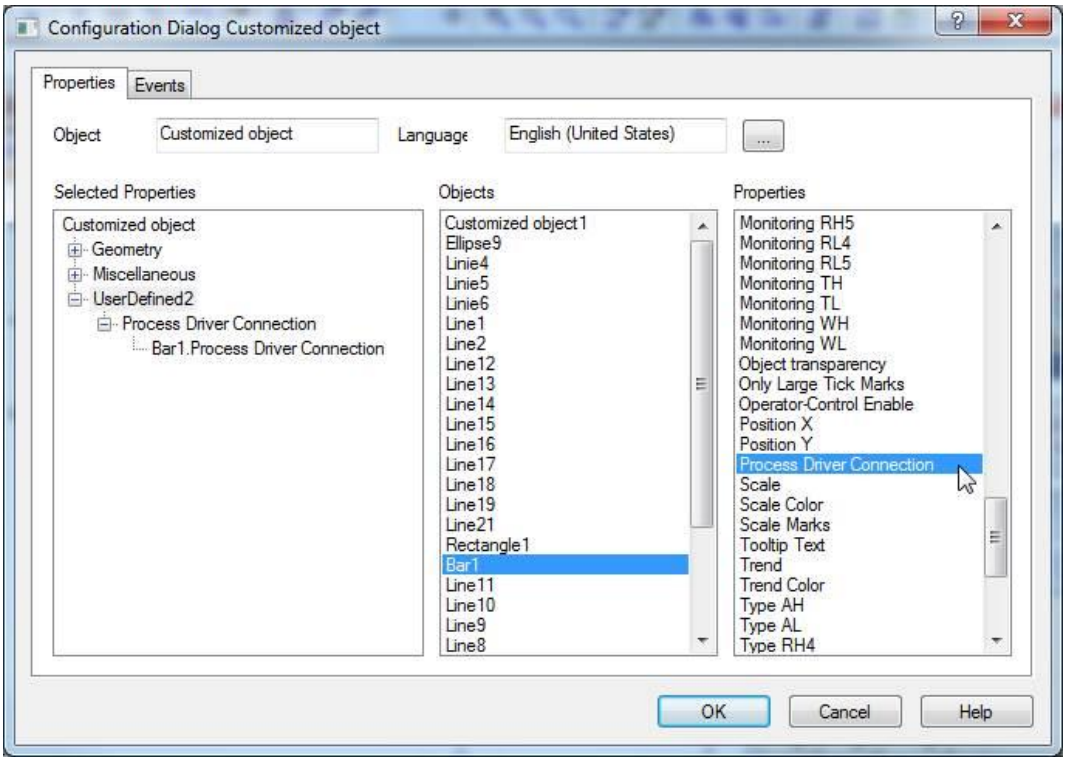
38. Then, highlight all objects and right click on the selection. Now, select ‘Create customized object‘. (→ Customized object → Create)



39. In the configuration dialog, in the left window click on ‘User defined’ and select the first property of one of the customized objects that can be parameterized later in the finished user defined object. Drag this property into the left window to UserDefined2. (→ User defined → Bar1 → Process Driver Connection → User defined)



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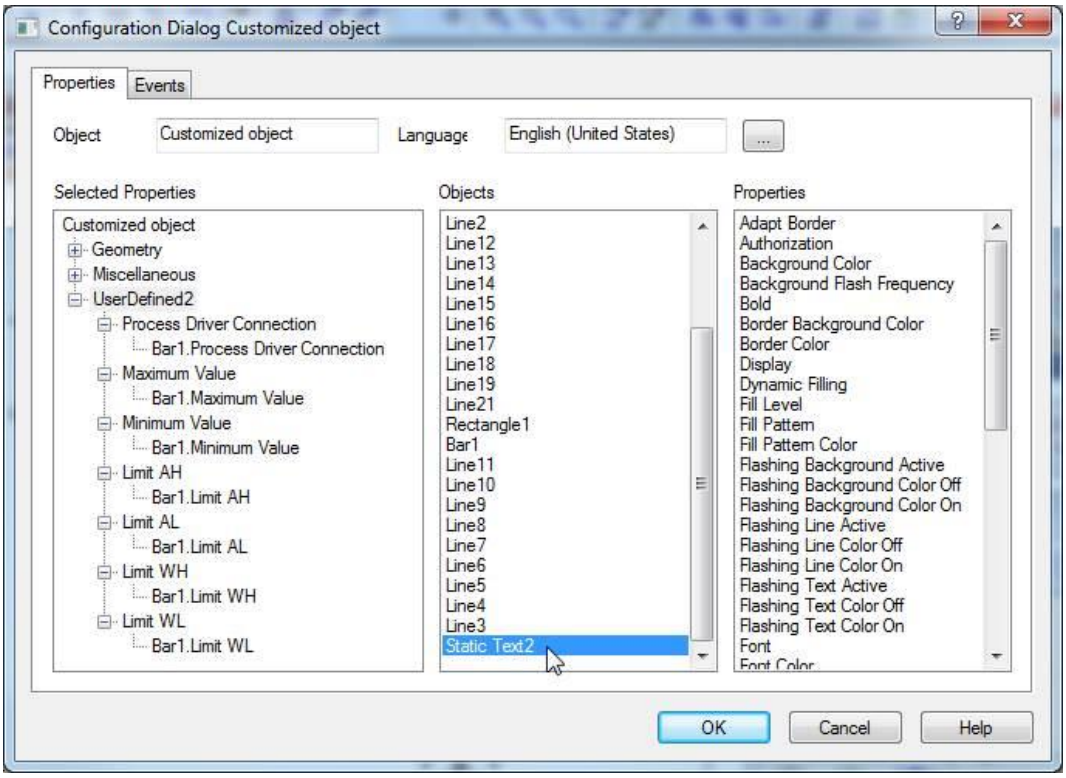
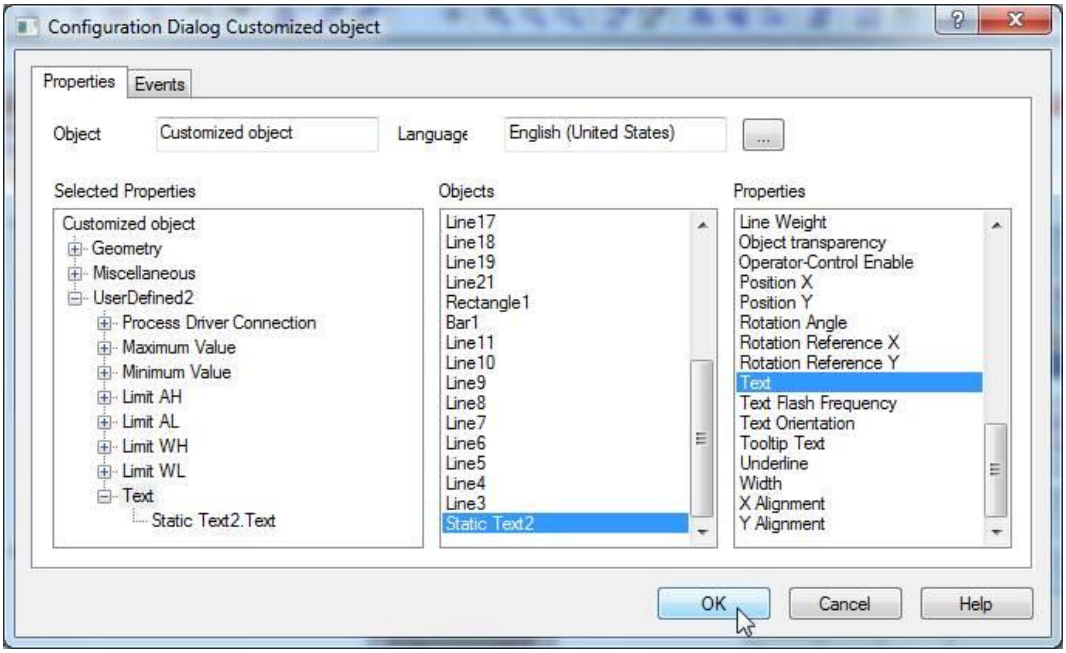
40. In this manner, select from the object Bar1 the properties ‘Process Driver Connection’, ‘Maximum value’, ‘Minimum value’, ‘LimitAL’, ‘LimitWL’, ‘LimitAH’ and ‘LimitWH’. (→ Bar1: Maximum value → Bar1: Minimum value → Bar1: LimitAL → Bar1: LimitWL → Bar1: LimitAH → Bar1: LimitWH)



41. For the text window ‘Static Text2’ that describes the reactor, have the ‘Text’ displayed. Then, accept the user defined object with OK.

    (→ StaticText2: Text → OK)



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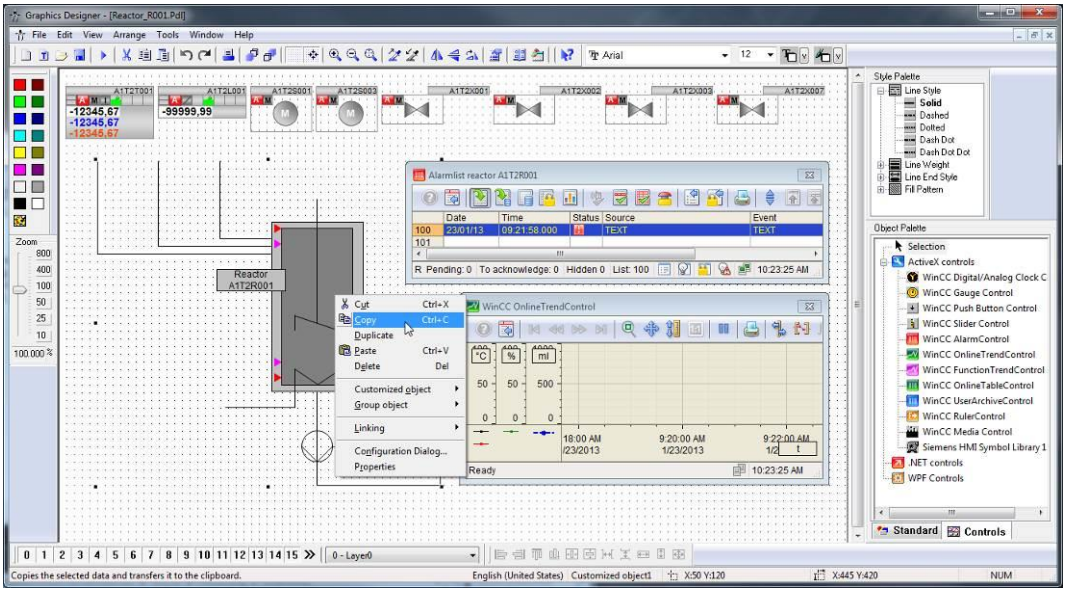
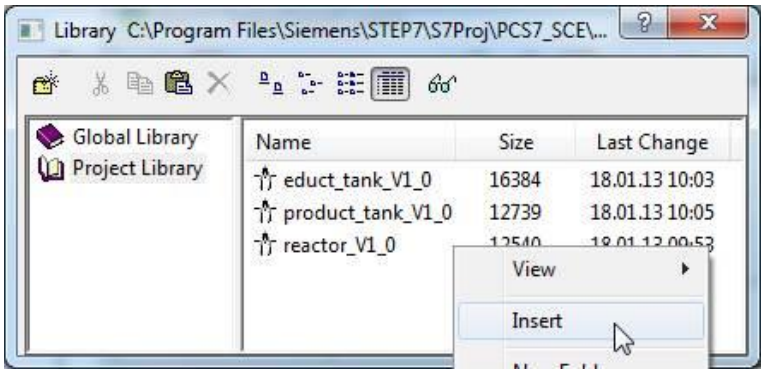
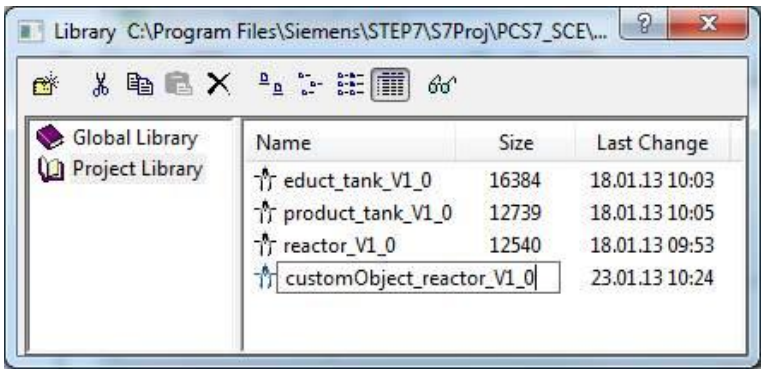
42. Now, copy the finished user defined object to store it in the project library for later use. (→ Copy)



43. Next, select the icon ‘ ’ to display the library. (→ → Project Library → Insert)



44. Next, change the name of the user defined object in the library to ‘customObject_reactor_V1_0’. (→ customObjekt_reactor_V1_0 → Close)



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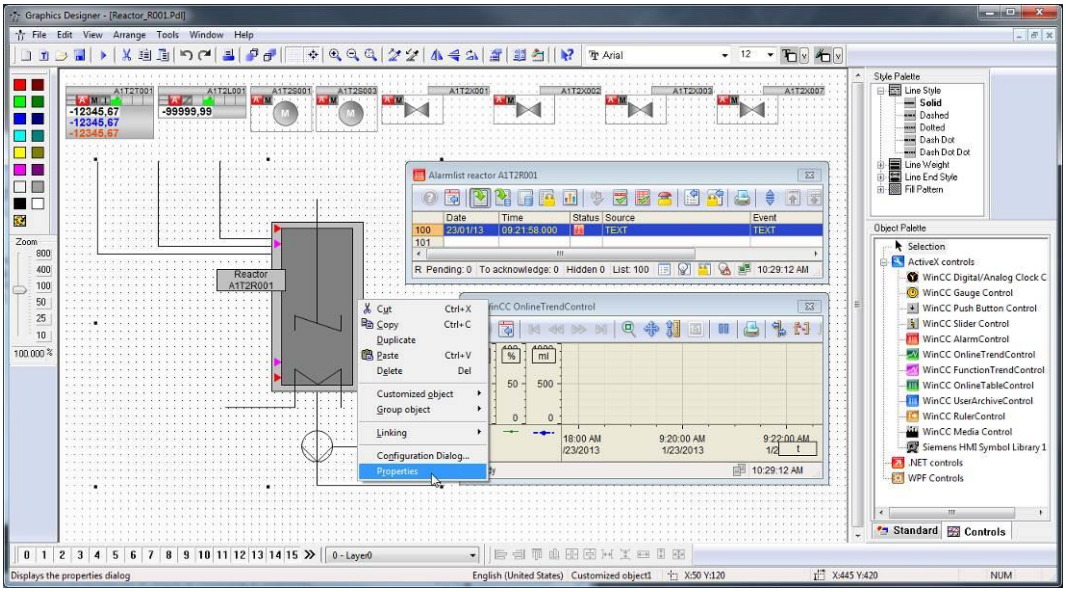
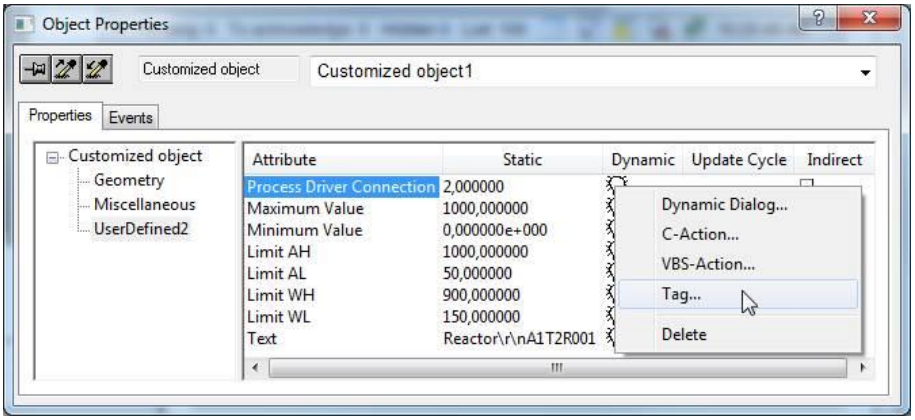
45. Now return to the user defined object in the picture ‘Reactor_R001.Pdl’ and select its properties (→ Properties)



46. There, in the properties under Customized object, the selected properties for the sub-objects are displayed under ‘Customized object’. For the ‘Process Driver Connection’ click on‘ ’ for ‘Dynamic’ and then select the tag. (→ → Tag)



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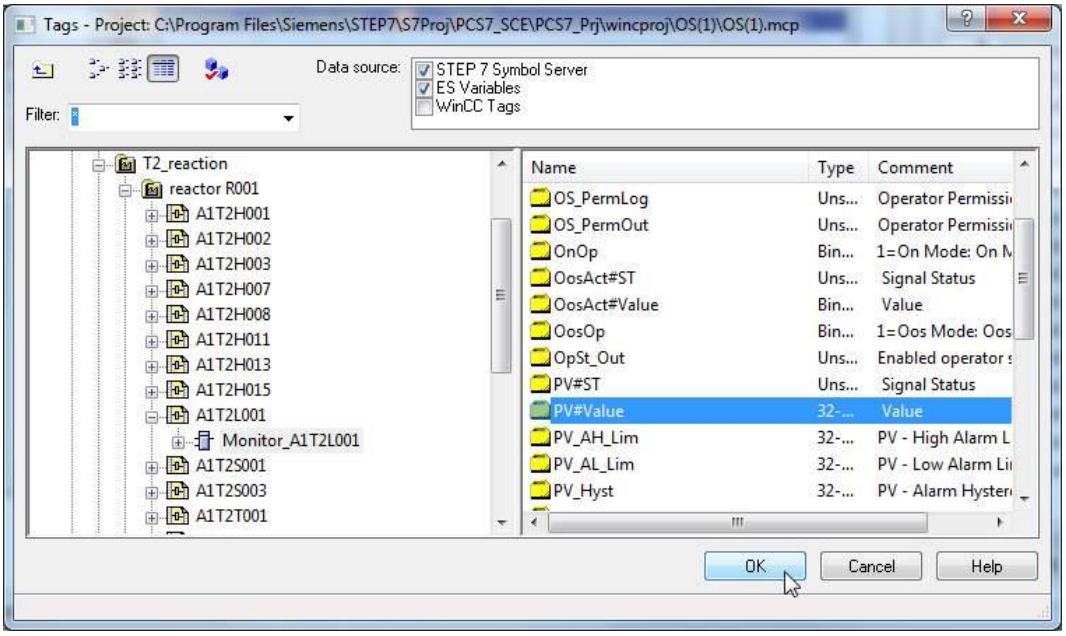
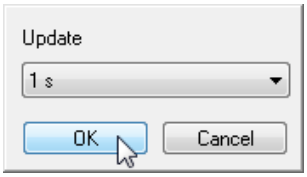
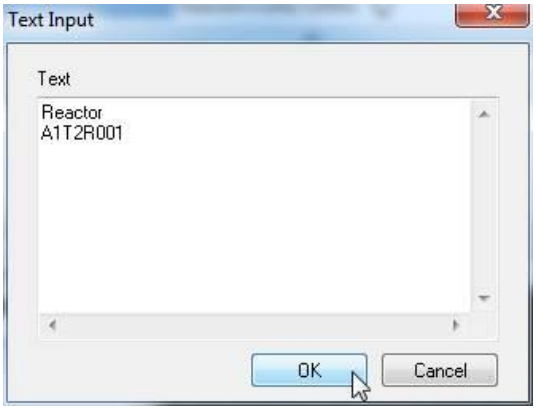
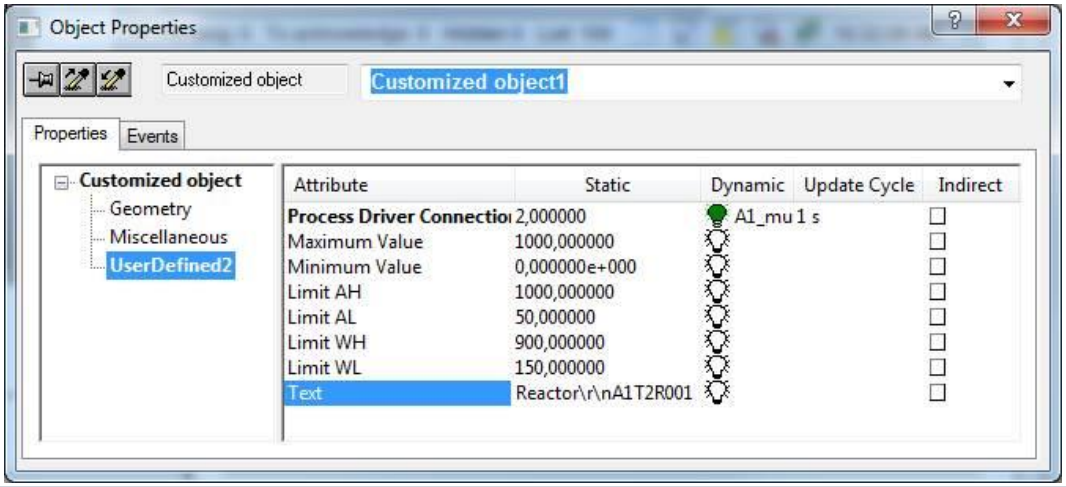
47. From the ES variables, select ‘A1_multipurpose_plant/T2_reaction/reactor_R001 /A1T2L001/A1T2L001/Monitor_A1T2L001/PV#Value’. (→ ES variables → A1_multipurpose_plant/ T2_reaction/reactor_R001/ A1T2L001/ A1T2L001/ Monitor_A1T2L001/PV#Value → OK)



48. Now, for ‘Dynamic’, select an ‘Update Cycle’ of ‘1s’. Next, set the other properties as shown here. Then close the window. (→ Update: 1s→ Text: Reactor\r\nA1T2R001 →)







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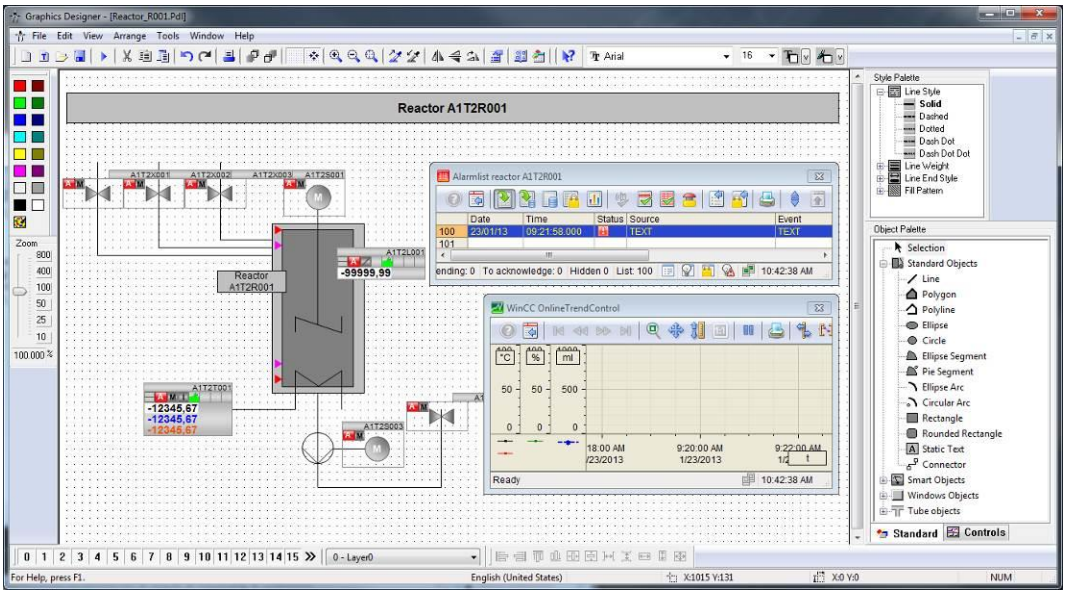
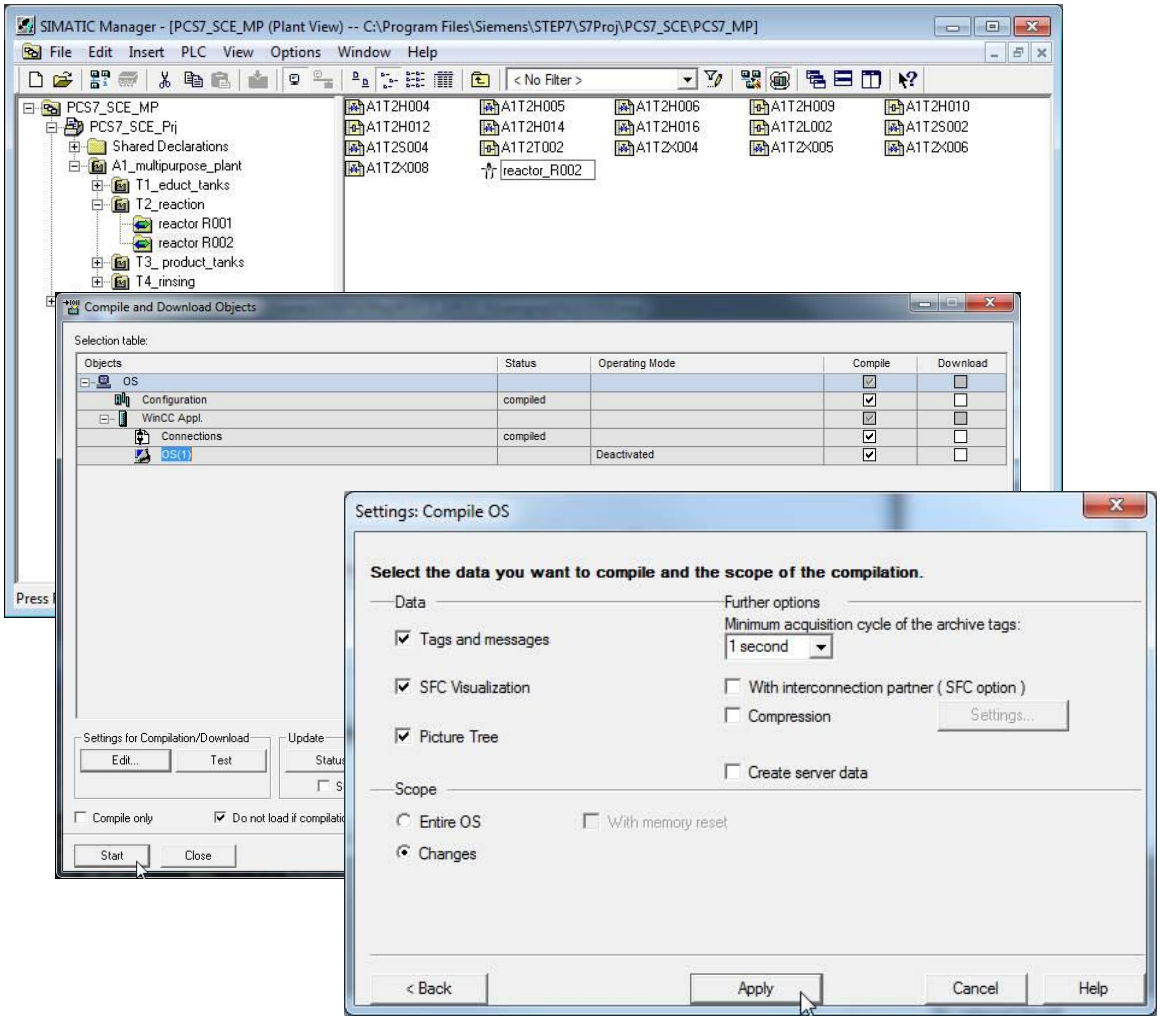
49. Finally, we should position the faceplates (picture blocks) correctly, label and save them.



50. Now, we want to use the customized object in the picture 'Reactor_R002.Pdl'. To this end, set up a new picture in the plant view of the SIMATC Manager in the folder Reactor R002, and compile the changes of the OS(1).



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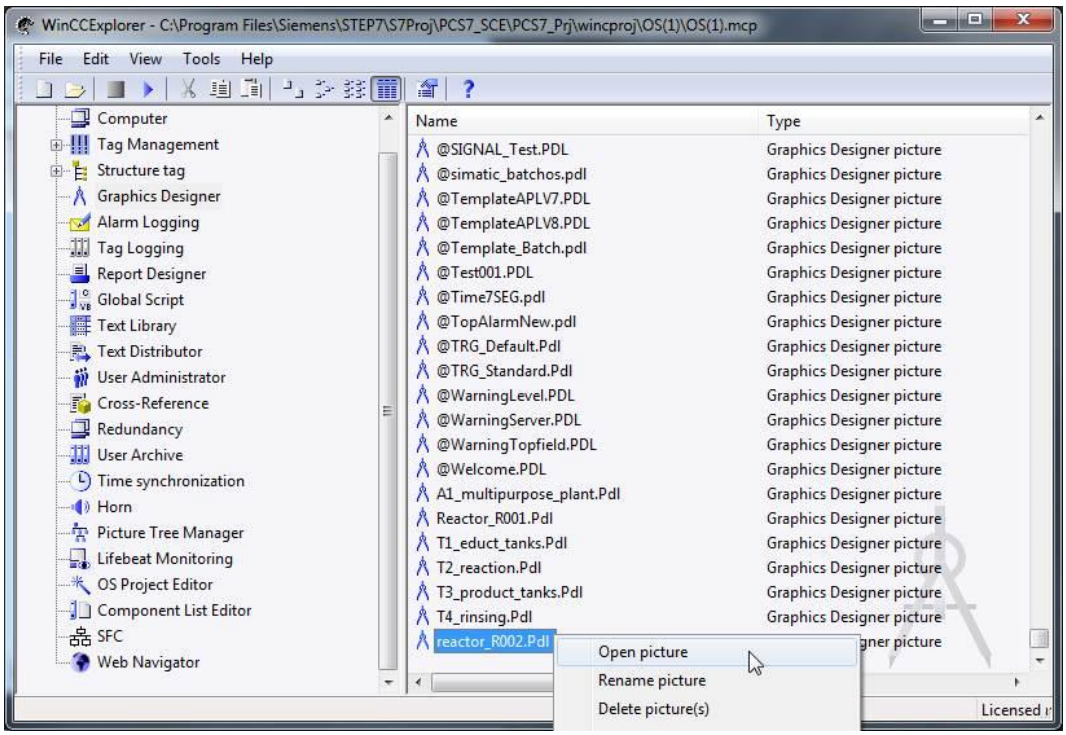
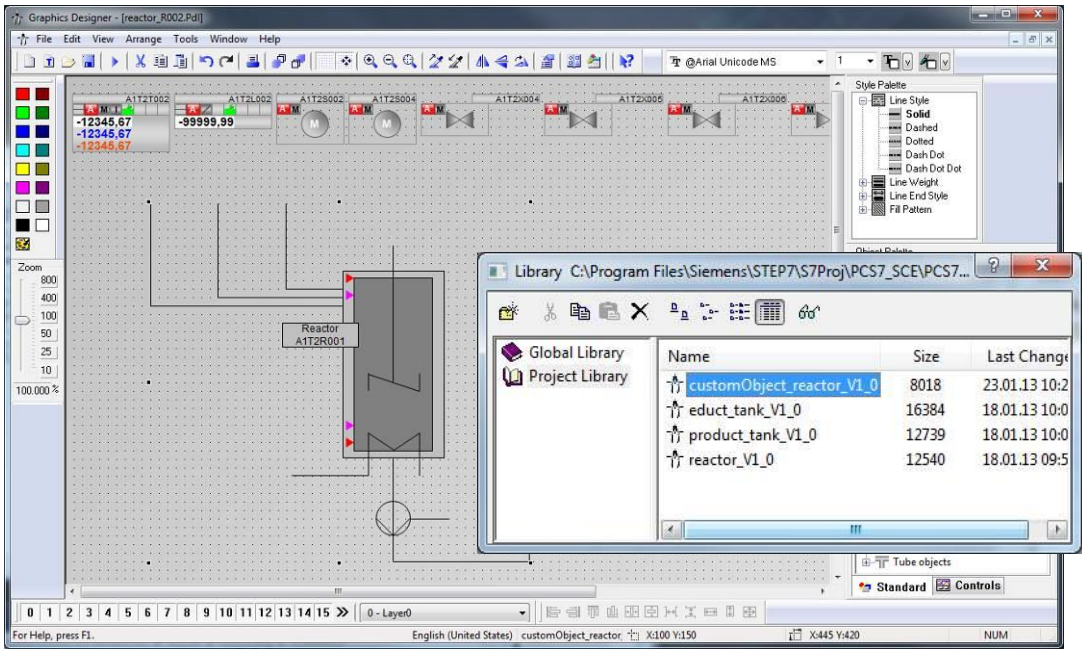
51. Now open the picture ‘Reaktor_R002‘ in the Graphics Designer.

    (→ Graphics Designer → Reactor_R002.Pdl → Open picture)



52. By clicking on the icon ‘ ’ the libraries are displayed; from the ‘Project Library’ drag the ‘customObjekt_reactor_V1_0’ into the picture.

    (→ → Project Library → customObject_reactor_V1_0)



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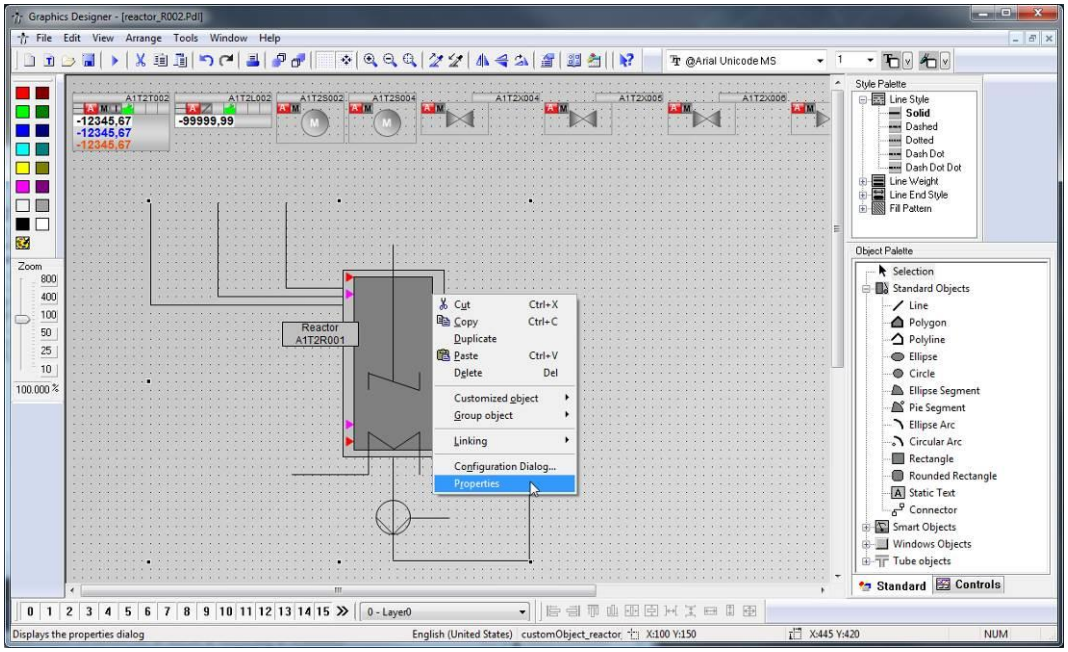
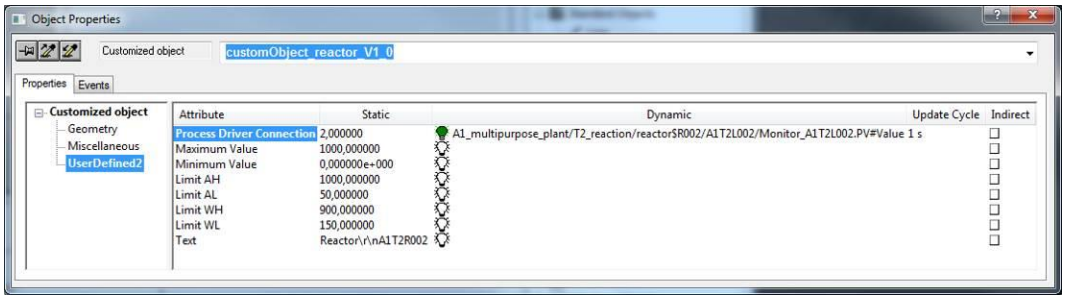
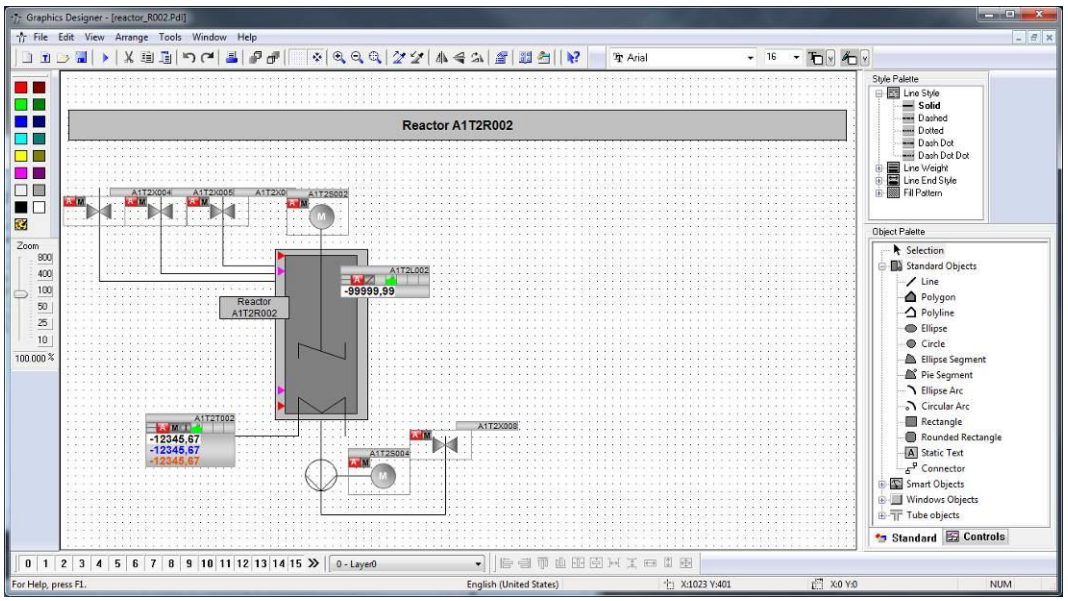
53. In the properties you can now access, under ‘UserDefined’, the selected properties of the customObject. Thus, you created an object with a specific selection of properties that can be used again and again quickly and effectively. (→ Properties → Object Properties → UserDefined)





54. Finally, set the geometry, the background color and the deselection of the color scheme as you did in Step 11. Now, arrange the faceplates and insert a picture title.



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EXERCISES

In the exercises, we apply what we learned in the Theory section and the Step by Step Instructions. To this end, we use and expand the existing multi-project from the step by step instructions (PCS7_SCE_0301_R1305_en.zip).

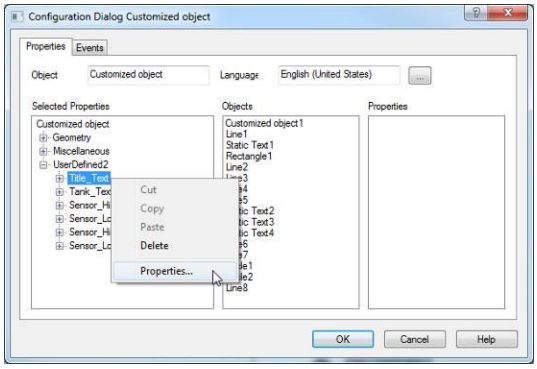
We are creating a new user defined object for the tanks with an upper and lower sensor. It can also be used to generate detail displays for the other plant sections.

In addition, the detail displays are to be accessible from the overview page by clicking on the corresponding text.

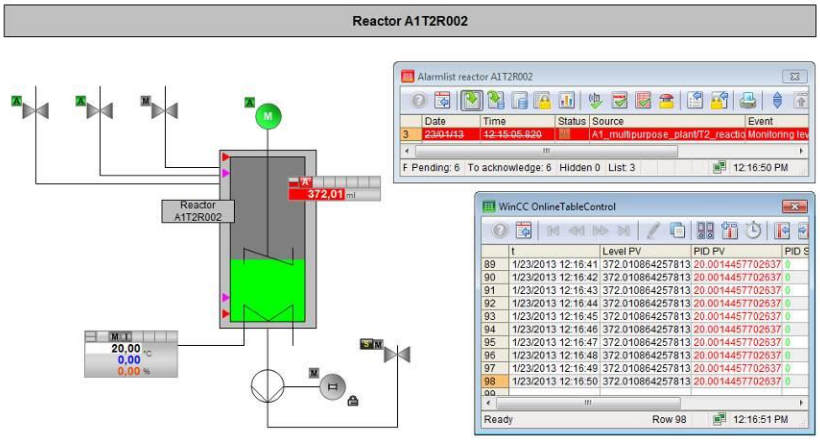
To the existing detail display of reactor R002, additional ActiveX Controls are added.

TASKS

1. Create a new display on the level of educt_tank B001. Get the template for the tank from the library and ungroup the group.
2. Now, create from the tank a customized object. Select the modifiable parameters. The names of the new parameters are possibly not unique. They should be adapted.



3. In the overview display, generate links to the newly created displays by expanding the existing static texts by a dynamic. Use the Dynamic Wizard – Display functions – Picture change in the working area, as in chapter P02-01.
4. In the detail display ‘Reactor_R002‘ insert an alarm list and then configure the list in a way that only alarms for Reactor R002 are displayed.
5. Last, instead of an OnlineTrendControl configure an OnlineTableControl and have the level, the actual value, the setpoint and the manipulated value of the control system displayed.



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